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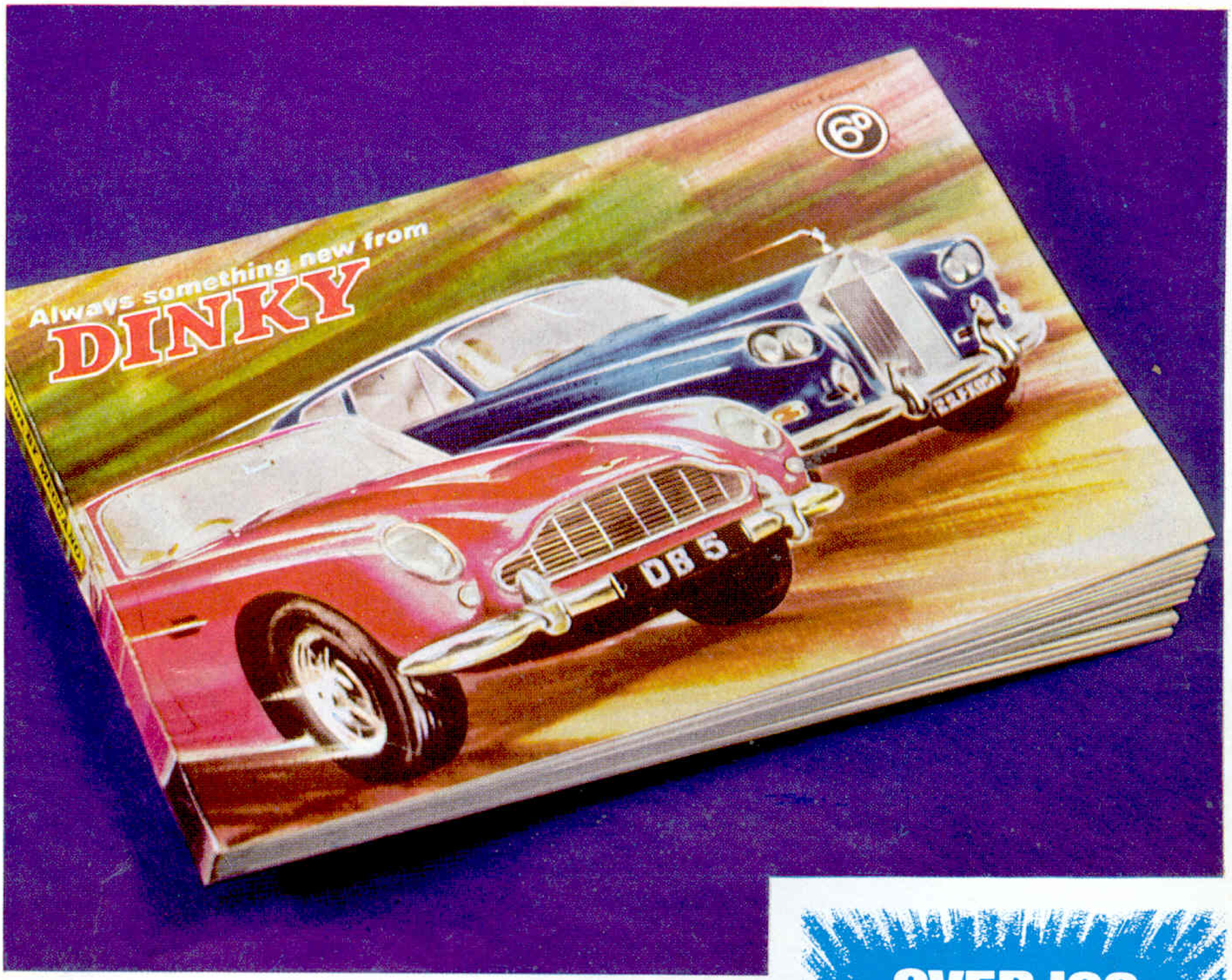

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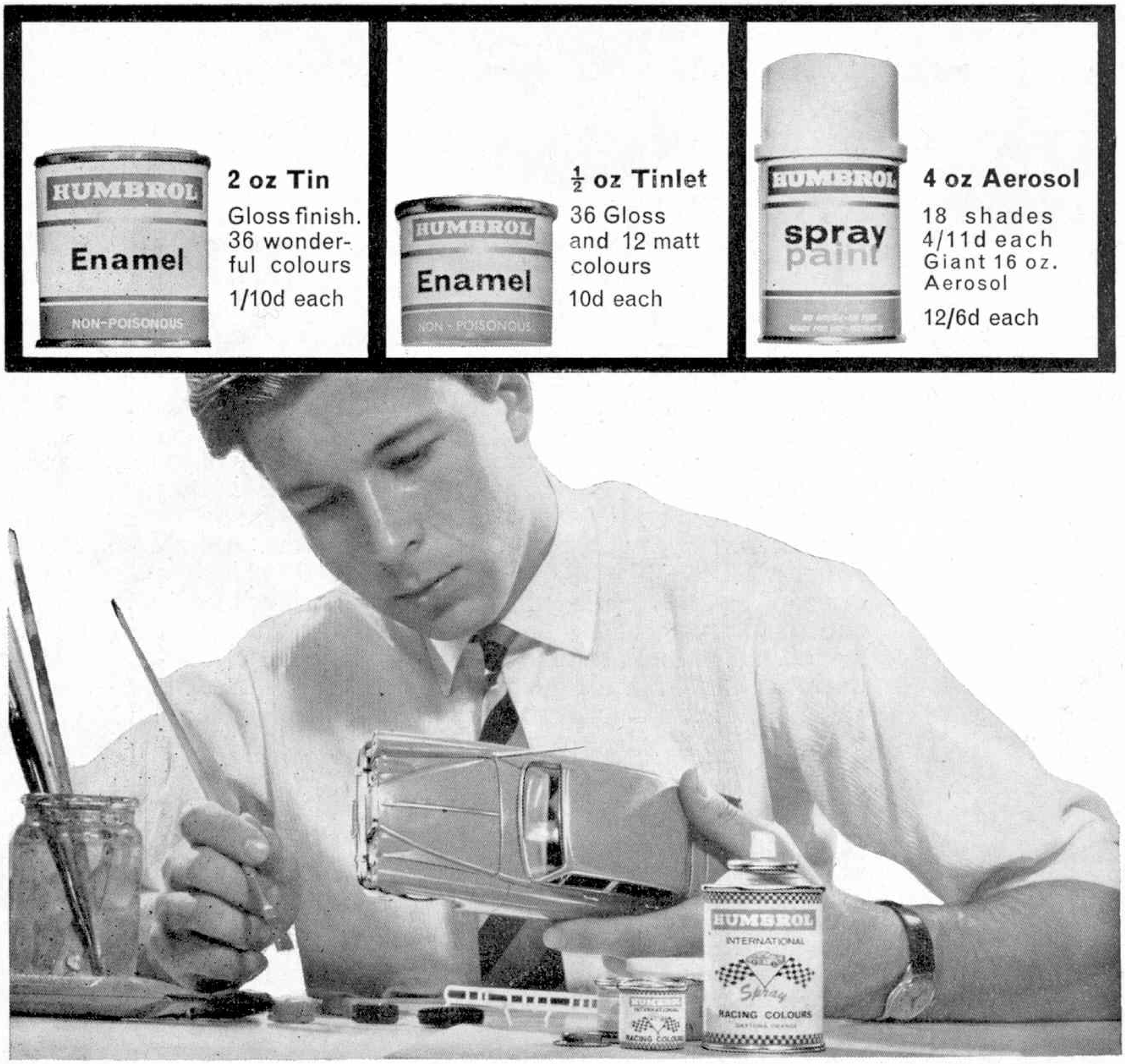

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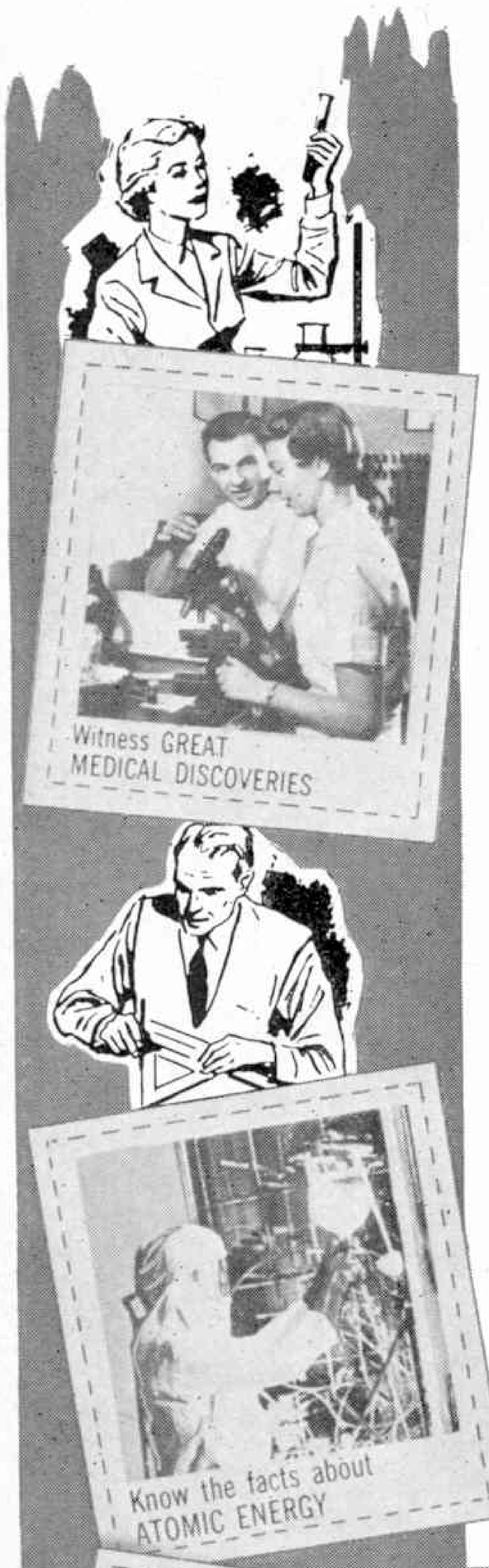

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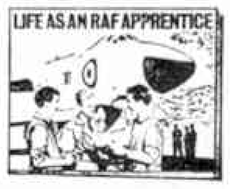

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Readers overseas can order the Meccano Magazine from Meccano dealers or direct from the publishers, or from the publishers' offices listed above. The subscription rate for 12 months is the equivalent of 25s. sterling at the current rate of exchange, U.S.A. and Canada $4.00.

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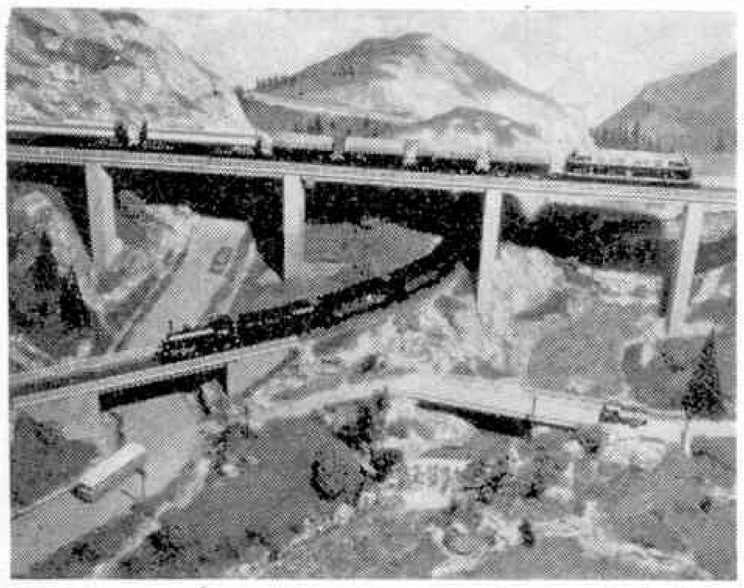
May 1966
Volume 51 · No. 5 · Monthly



On the cover: a beautiful little cameo from the 'N' gauge Arnold layout in Nuremberg which is mentioned elsewhere in this issue. This entire scene occupied an area only about *two feet square*—a striking example of the scenic potentialities of 9 mm. gauge. The brilliant blending of foreground and painted background, and the general air of realism are worthy of close study.

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Next month: the start of a new model aircraft series by Ray Malmstrom, with a full size plan for an easy-to-build sure-fire flier and really comprehensive building and flying instructions that will, in effect, be a complete basic aeromodelling course in miniature!

Help us to pack the big new M.M. with the features you like best by completing the Readership Questionnaire included in this issue. Postage is free in U.K. Now is your chance to say what you want in your magazine!

Most hobby magazines, smaller and far less colourful than ours, cost two shillings and sixpence—and have done for some time. It has been a constant source of wonder to many readers that Meccano Magazine has been able to maintain its bargain price of 1s 6d in these days of constantly rising production and distribution costs.

Only a healthy circulation and willing support from our advertisers who—thanks to you—get results from their advertisements, have enabled us to keep Mr. Rising Price at bay for so long. However, a price increase of 3d has at last become inescapable if our size and quality are to be maintained.

Now, as Editor, I find the present number of pages very restricting, and from your letters, I know that you too would like a bigger M.M. So we have decided to increase the price by a further 3d to enable us to add eight more pages and a second colour too! I am sure you will agree that 6d a month is a modest price to pay for our bigger and brighter Meccano Magazine.

Let me hasten to reassure those Doubting Thomases that it is not intended to revert to our old, smaller size in a couple of months' time, as so many books do following a price increase. This is a genuinely enlarged M.M.

To yet further increase your value-for-money, we have increased our 'type area'—that is to say, cut down the size of the wasteful page margins—to give you even bigger pictures and more to read.

So you see, with more pages, more reading per page and colour, it's still by far the best value in hobby magazines! and still 6d cheaper than most others.

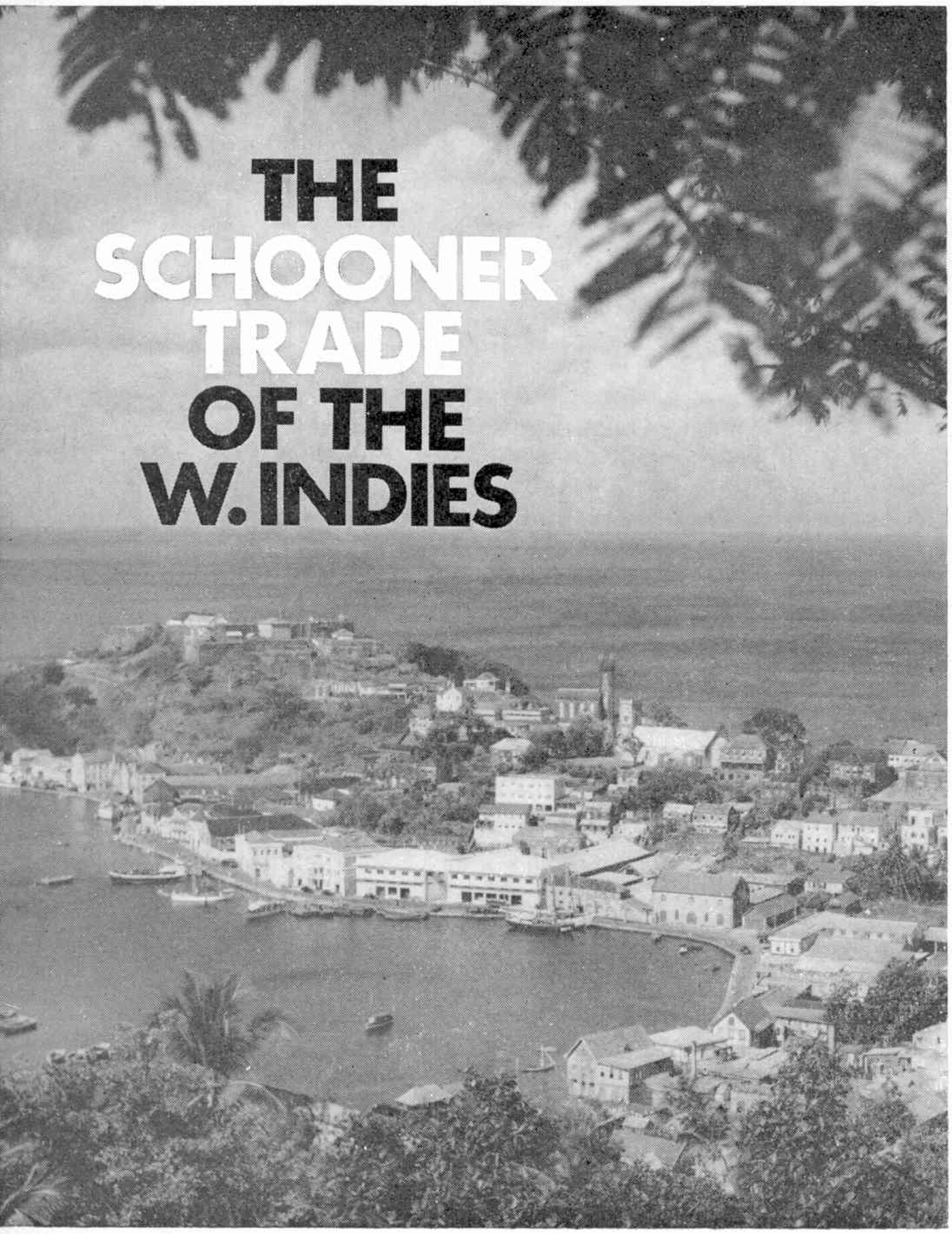
Project '66—our four-part powerboat building series, completed last month, proved to be a resounding success. So much so, in fact, that back orders for the January issue (containing part I of the series and the free hull plan) have completely exhausted our stocks, and no further orders for this number can therefore be accepted—sorry!

For the benefit of new readers who missed the first part of the series, we have arranged for copies of the plan and photocopies of the accompanying instructional feature, to be made available from the editorial offices, price 2s 6d post paid.

Be warned! Don't miss another vital issue—place a regular order with your newsagent, or take out a direct subscription and be sure of your favourite magazine on the dot every month!

The Editor

These beautiful craft still earn their living on the sun-drenched waters round the West Indies, but their days are numbered for the urgency of modern commerce demands that one day soon their sails will be replaced by engines. SUZANNE TWISTON DAVIES has captured for us some of the timeless romantic atmosphere inseparable from sail, and ANNE BOLT supplied the pictures. There's a fine Trading Schooner drawing on page 9 too.



THE SCHOONER TRADE OF THE W. INDIES

ONE of the most picturesque scenes still existing in the West Indies is furnished by the inter-island schooner service. In Trinidad, for instance, a large part of the waterfront at Port-of-Spain, which is otherwise devoted to the huge liners and cargo boats which call there regularly, is taken up by these beautiful sailing-boats unloading, or preparing for their next voyage.

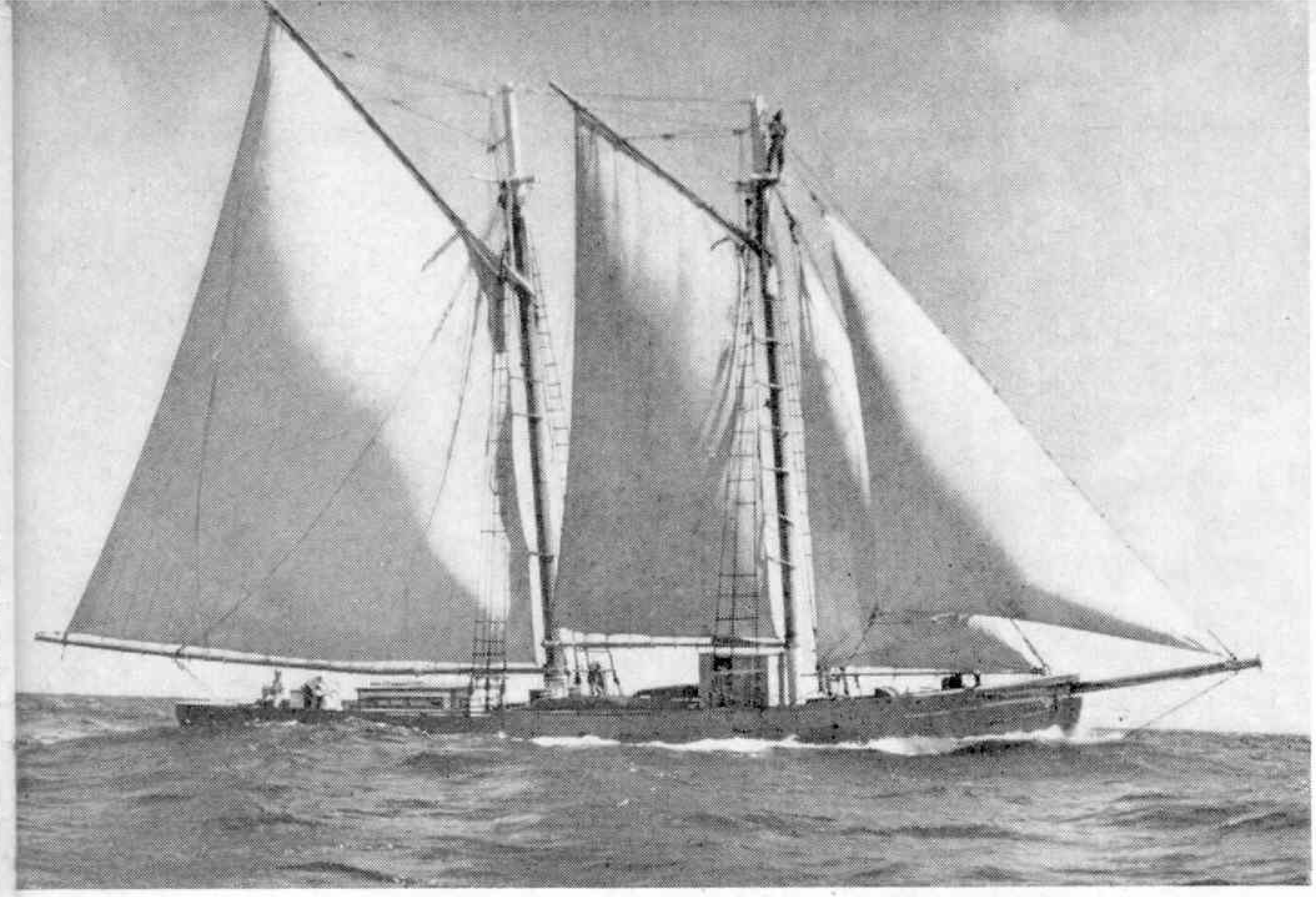
As one stands on the quayside watching the schooner crews in their huge straw hats and cotton trousers, black muscles rippling shinily as they work, and the negro women in their gay skirts and blouses with brilliant bandanas round their heads on which they balance their baskets and other loads, one might well imagine that one had stepped back 150 years in time, and that at any moment a pirate ship would heave into sight on the horizon, fresh with plunder from the Spanish Main. How refreshing it is in this particular spot to see no form of modern civilization, but only sailing-boats, ancient warehouses, palm trees and brilliant blue sea.

The schooners usually weigh between 30 and 50 tons. Most of them have sails only, but a few have auxiliary engines which they use just for going into and out of harbour. The boats are usually built on the island of St. Vincent, and are made of local wood. Hardly any machinery is needed in their building, but an adze is used to shape the timber of the main structure. When the boat is finished, it is painted all over with pitch and with copper paint to keep out the borer, an insect which lives in the water and which, as its name implies, bores into the wood of boats such as these. It is difficult to find the holes it makes under water, and there are few facilities for inspecting the schooners on dry land, so a boat which has not been adequately painted with pitch may get a number of borer holes close together which, in a rough sea, will suddenly become one big hole. Three or four schooners per year are lost entirely as a result of this insect's activities.

The schooners, which have a speed of 6-8 knots, and carry two or three sails, ply back and forth between the islands, taking, from Trinidad for instance, bricks, pitch pine, oil and butane. They bring back from Barbados coral stone (a building material which can be cut by saw), and from St. Vincent, Granada and St. Kitt's, vegetables and live animals, and from Tobago conch shells.

The boats are often owned by Negro families, of which the father or the elder son is captain, and there is usually a crew of eight. The hands are paid about £2 per week each, and the captain about £5. The younger captains use a compass to navigate, but the older generation still steer by the stars and, as this method is not always 100 per cent efficient, they also carry a small pig on board which starts to grunt and becomes wildly excited when it senses that land is near!

A doctor friend of mine once decided that it would be fun to travel as one of the six passengers on the schooner *Maria,* sailing from Barbados to British Guiana. As an honoured guest, he was given the captain's 'cabin', which was a sort of hole below deck. The crew and the other passengers, less fortunate, had to sleep on deck, which, owing to the amount of space taken up by the rigging and various small holds, must have been well-nigh impossible! The food, he said, was well-cooked—in the intervals when the cook was not doing his turn at the wheel—but as the journey, which was supposed to take two days took, in fact, six, owing to the lack



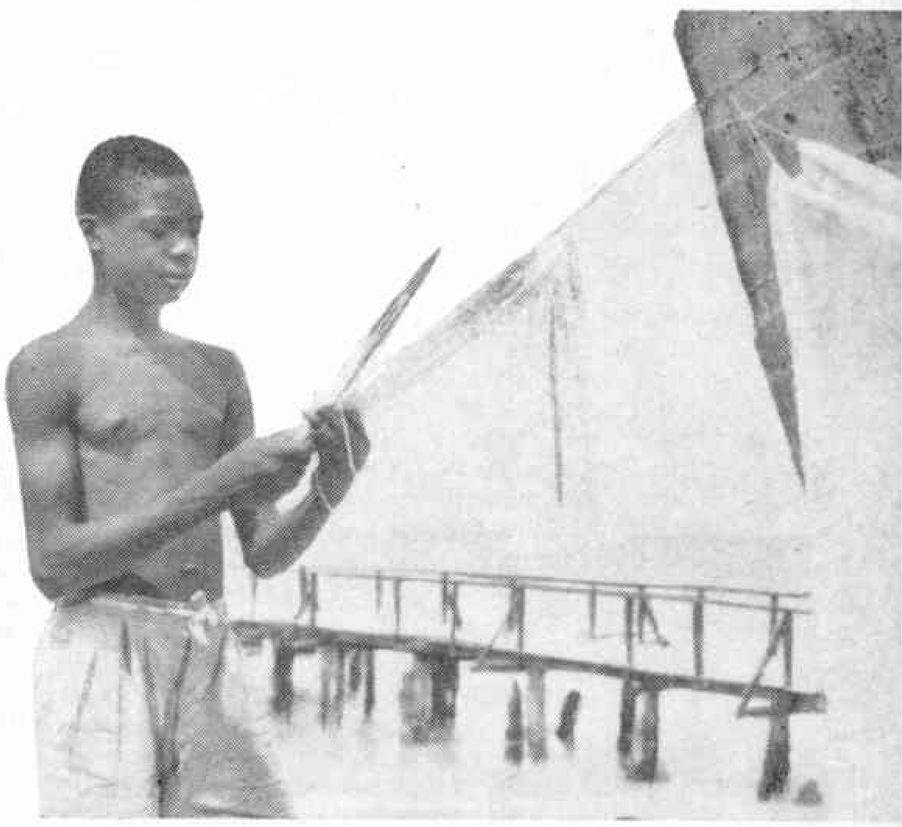
Facing page: Grenada—St. George's capital and principal harbour with inter-island schooners along the quay

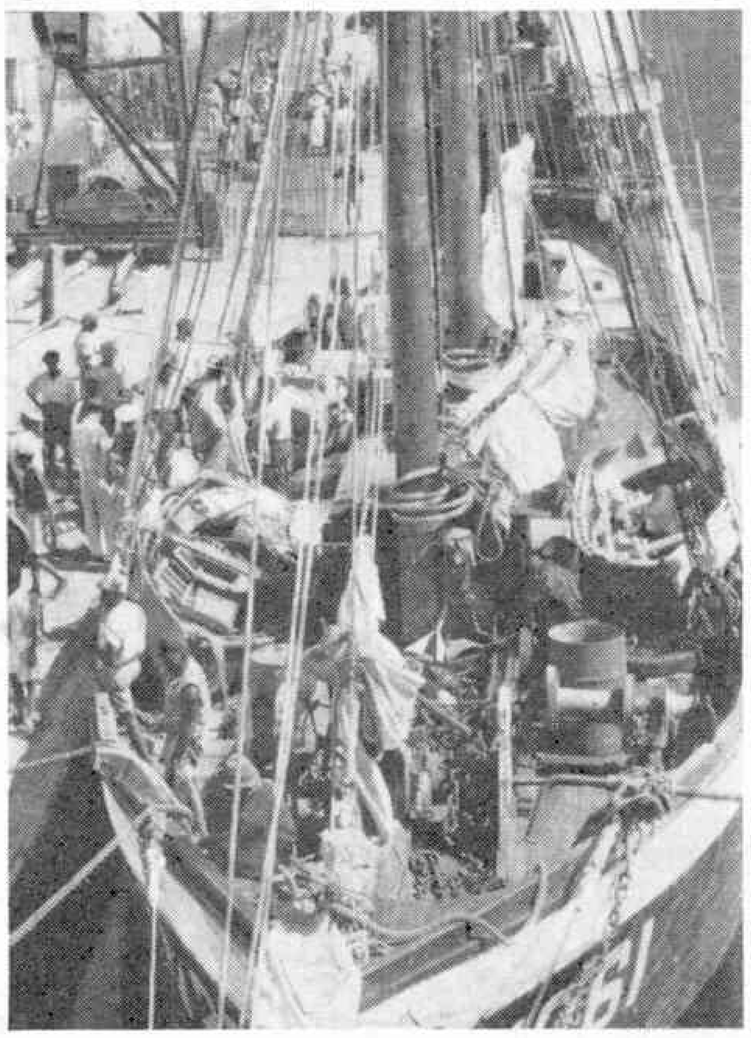
Left: a typical schooner in full sail with the sun beating down on the canvas

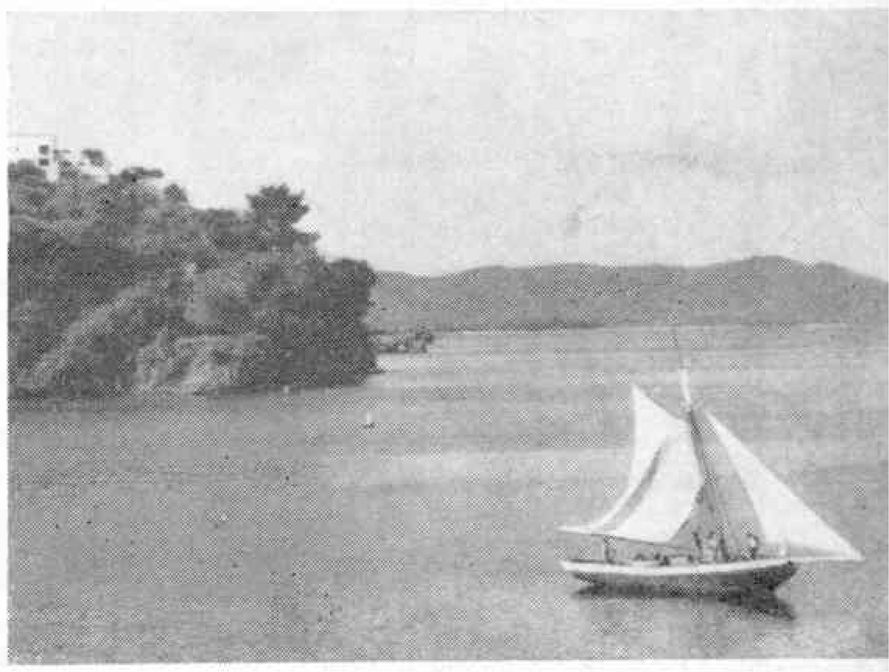
Below left: bananas collected from the little harbours are brought to the main port for transfer to the ocean-going refrigerated ships

Below: most St. Vincent youngsters know how to make a fine seine net. The lower picture shows a small inter-island schooner setting out from Grenada

Below: a typical fishing 'character' with his nets drying in the background







of breeze, he found an unvarying diet of rice, vegetables and tinned meat rather monotonous. Also, the sanitary arrangements were negligible, and he would have loved to swim beside the boat, but this was expressly forbidden by the captain.

For days they lay becalmed, scorched by the sun, and with nothing to do but fish. They caught flying fish and sharks (young sharks make good eating, but only the fins of the older ones are edible), swordfish, porpoises and turtles. The captain told the doctor that, if one sees a school of porpoises, one may be sure that there will be no sharks anywhere near them; sharks hate porpoises because the latter think it is terribly funny to go cavorting up to fishes bigger than themselves and bounce off them! At night, the sailors would sit with the passengers and tell them stories, chiefly of the hazards of trading during the war when U-boats were quite likely to surface besides a defenceless schooner and force the crew to give up all their stores; some of them were even sunk with all hands.

At last, on the fifth day, a tiny breeze got up, and after some hours they found themselves outside Georgetown Harbour. But to get into the harbour under these conditions meant changing sail twenty times in two hours (and this is really a Herculean task, for the schooners have no winches, and the sail can only be changed by pulley). The doctor said that the captain's language as they laboured at this task needed to be heard to be believed, especially when passing motor-vessels ignored his pleas for a tow into harbour.

Now, alas, these picturesque ships are in danger of being superseded by the swifter motorised vessels which have also started to ply between the islands. Often a schooner will lie in harbour for three or four days without finding a cargo. Even the very small traders who have up till now sent their cargoes by schooner are finding that they risk losing their trade if they cannot name an exact date of delivery; and, even with the aid of the pig, schooners have been known sometimes to go completely off course and arrive at the wrong island!

It seems that, as the years pass and the hustle and bustle and competition of the modern world increases, fewer and fewer things of grace and beauty are to be left to us.

RAILWAY NOTES

Ton-up on East Coast Trains on the Eastern Region's East Coast main line to and from King's Cross Station, can now travel at 100 m.p.h. on the 21 mile stretch of track between Cadwell North and Hitchin, to the South of Offord. This is the third section of the East Coast route on which speeds of up to 100 m.p.h. are permitted. The other two are the 17 mile section between Peterborough and Grantham and the 12 mile section between Grantham and Newark, making a total of over 50 miles so far.

More colour light signals Colour light signalling and track circuiting has recently been installed on a further 11½ miles of track on the East Coast main line between Darlington and Ferryhill. The colour light signals are automatically controlled by track circuits between Ferryhill No. 3 Signal Box and Darlington Parkgate Signal Box—immediately to the North of Darlington Station. Intermediate manual lever type boxes at Aycliffe, Preston and Bradbury have been closed.

Y7 tank preserved A Y7 0-4-0 tank engine built by the North Eastern Railway over 70 years ago has been bought for preservation by the Steam Power Trust '65. The locomotive has, for the last 30 years, been employed on colliery work, and was latterly N.C.B. No. 64 at Watergate Colliery, Gateshead. The Trust intend restoring the locomotive to its original N.E.R. livery, and also to preserve the engine in working order on the Middleton Railway in Leeds. The locomotive carries the number 1310, one of a batch of seven of the class to be turned out at Gateshead Works in 1891. **(Photo below)**

New Rail Tamper The Scottish Region of British Rail recently introduced a new Austrian built machine to automatically take the kinks out of track. The machine is capable of doing the work at vastly greater speeds than have hitherto been possible, and it has been estimated that the saving will ultimately amount to several hundred thousand pounds. Mr. Campbell, the Chief Civil Engineer, said, 'This revolution in the methods of track maintenance will involve the disappearance in a short time of the traditional length gang and its replacement by a mobile mechanised gang. The old length gang might cover about 120 yards of track maintenance in a day, whereas the modern tamper or mechanical track maintenance machine will cover the work at ten times the speed.'

Record Breaking DP2 The record breaking English Electric DP2 prototype Co-Co diesel electric locomotive, now on hire to the Eastern Region of British Rail, has currently completed over 430,000 miles in regular service. Generally similar in appearance to the English Electric type 4 diesel electrics, the locomotive is now active in the Welwyn area and used for driver training and other duties. It is shown here leaving King's Cross on its first journey to Sheffield hauling the 11.20 Pullman. Its overhaul after 360,000 miles, completed recently, included a record 43,000 miles clocked up during 58 consecutive days, running. Negotiations are now in hand between English Electric and B.R. for an order of 50 of these engines, and it is said that there is a possibility of the production models departing from the traditional English Electric 'bull nose' design. **(See bottom photograph on this page)**

SHIPLANS

No. 2

We thought the story on page 6 so interesting, that we invited Ian Stair to prepare this fine drawing as the second subject of his new series

AMERICAN TRADING SCHOONER

THE fore-and-aft schooner is the typical rig of the American sailing ship. Although it originated in the Old World, the Americans developed it not only for small craft, but also for large ocean carriers with up to seven masts.

The earlier American schooners were remarkable for the large angle of rake to the masts and for the very fine lines which contrasted strongly with the bluff shape of the European ships of the time. These fast sailers led to the development of both the clipper ships and the modern yacht.

The drawing shows a schooner which was typical of the American small trader at the beginning of the present century, although of somewhat shallower draft than usual. Some of these little ships are still working today around the islands of the Caribbean and the Pacific Ocean, but in most cases they have been cut down to the baldheaded rig shown in the small sketch.

As sailing ships go, this is a fairly simple subject to model. The hull is a single block of wood with a small piece glued on to form the raised deck aft. A rebate around the main deck will take a bulwark of stiff card, this being glued in place after the deck has been rubbed down but before the final finishing of the outside of the hull. This will enable the lines to be blended in across the joint.

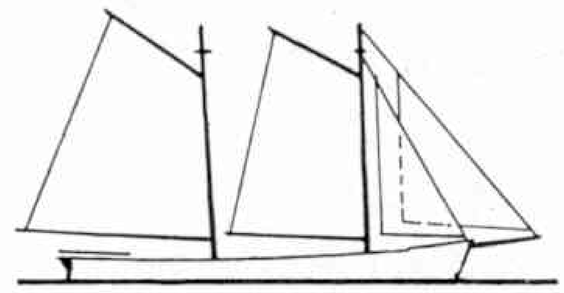
The rail around the hull at deck level may be of thick thread glued in place and the rail on top of the bulwarks and around the raised deck, made of card carefully cut to shape. The keel and rudder posts are simple jobs, but the stem needs more fitting; the inside part should be cut to shape and then trimmed until a good fit to the hull is attained. The outside is afterwards cut to shape before the piece is fixed to the hull.

The deck fittings are quite straightforward, and I will deal with this subject more generally in a later article in this series.

Suggested colour scheme

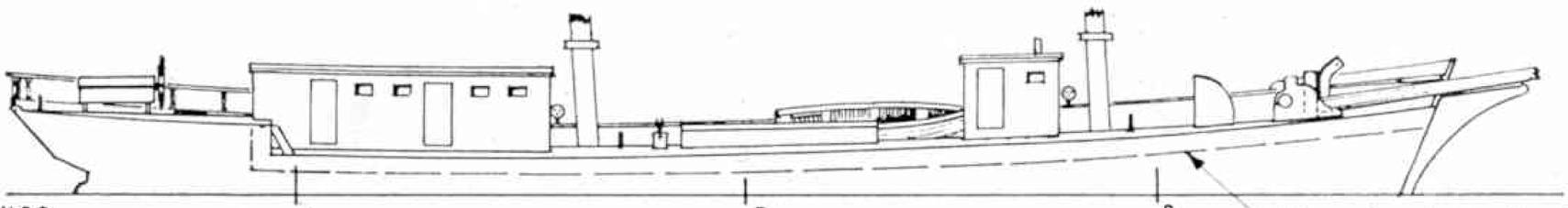
Hull—Green underwater, black above.
Decks, masts, deckhouse roofs, hatch covers, light natural timber.
Inside bulwarks, wheel box, deckhouses, companion, mast doubling and mast tips—white.
Windlass—Timber with dark grey working parts.
Sails—Natural cotton.
Standing rigging (stays and shrouds)—black
Running rigging—buff.

Front view of masts.

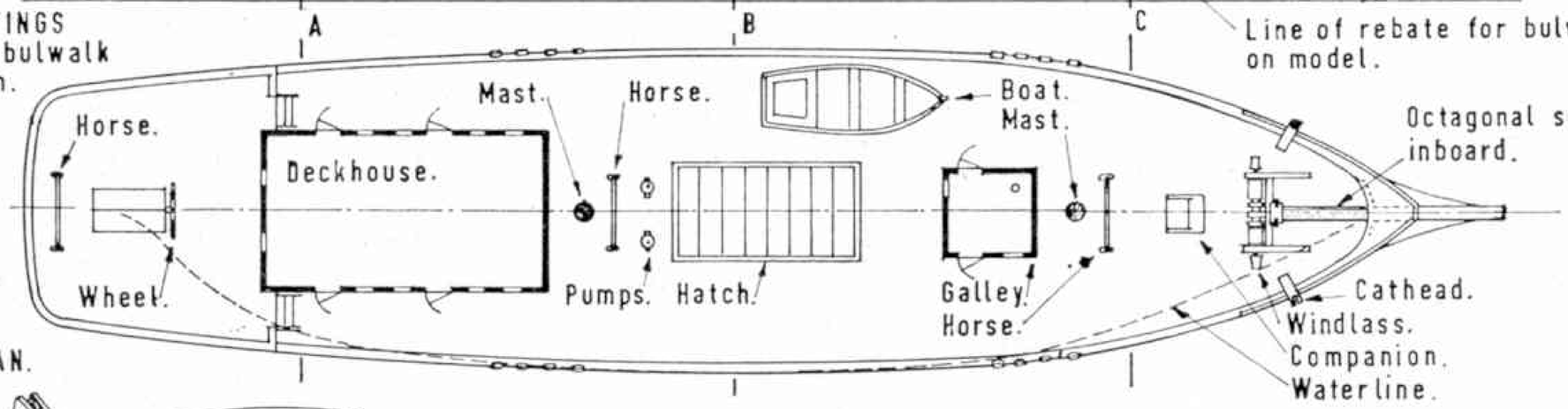


Typical cut down rig usual in later days.

SIDE VIEW.

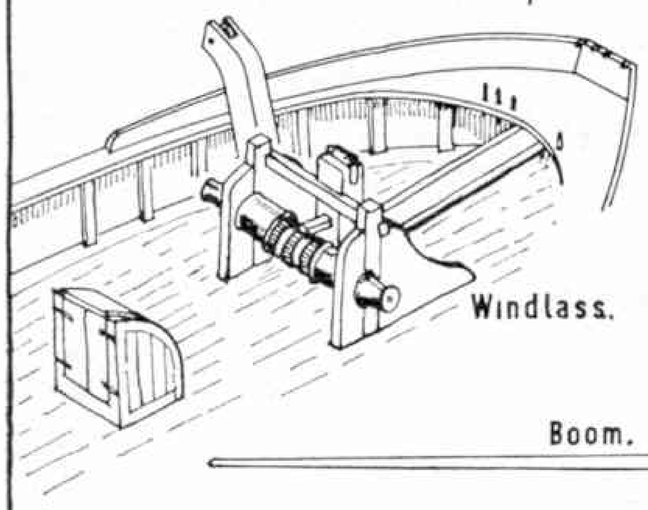


DECK FITTINGS
Nearside bulwalk not shown.

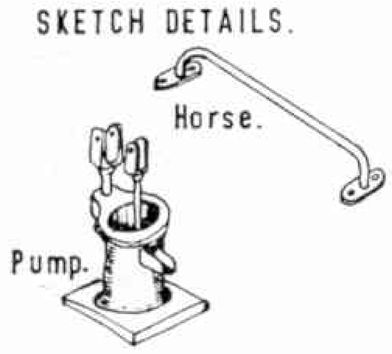


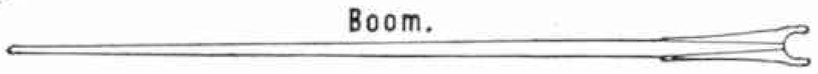
Line of rebate for bulwalks on model.

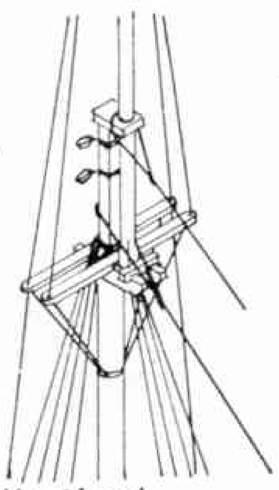
DECK PLAN.

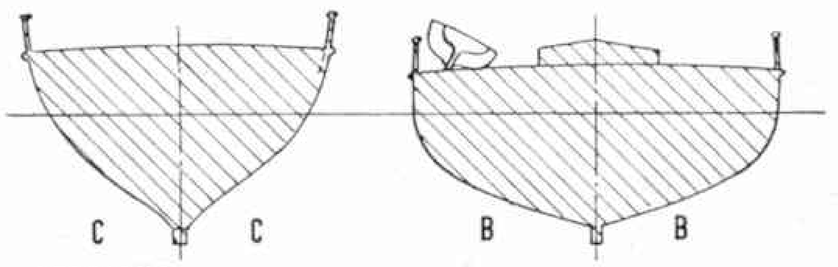


SKETCH DETAILS.

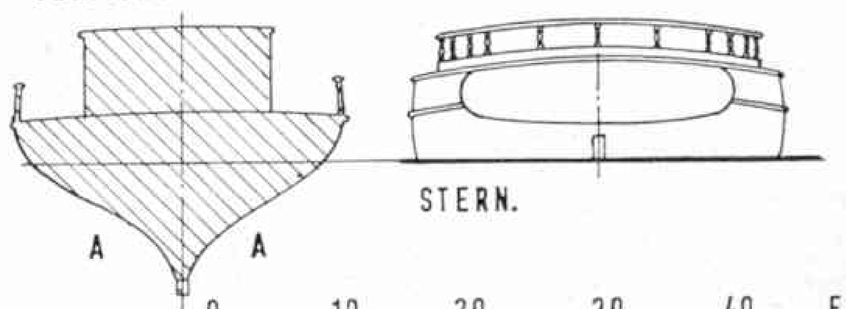








SECTIONS.



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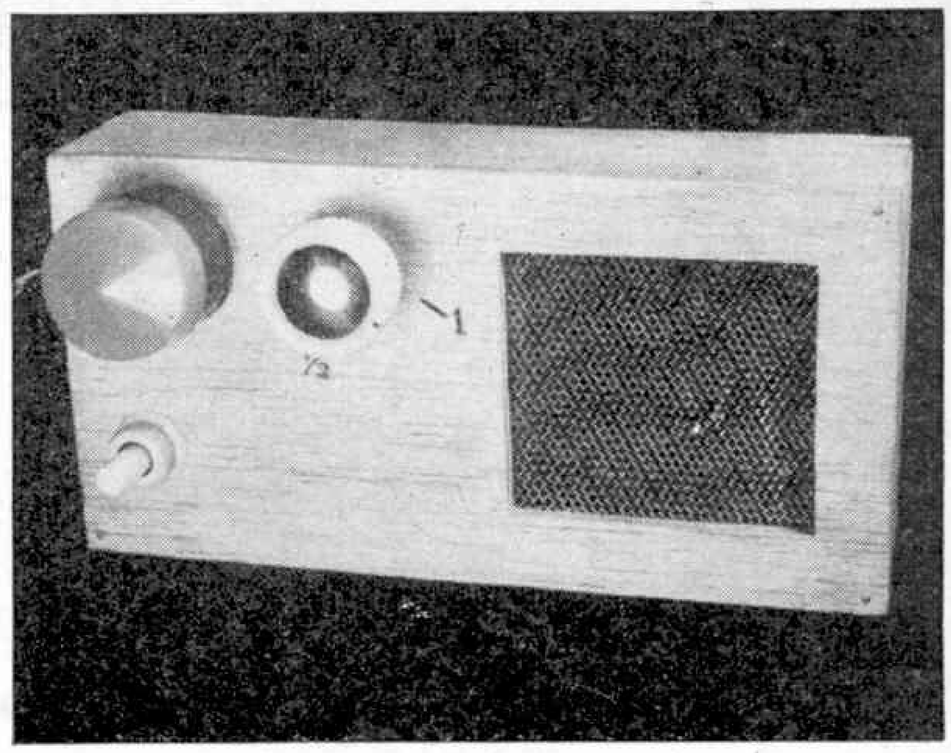
Ron Warring shows how to make a variable metronome for a darkroom, or music timer or as an exercise in simple electronic assembly with a difference.

pops & flashes



A METRONOME, in case anyone is not quite sure of the name, is an instrument capable of beating time at a predetermined rate—in other words, a sort of simple clock which gives a 'tick' at regular intervals. It is usually a mechanical instrument, like an elementary clock mechanism with a pendulum but no clock face. It is used mainly for setting the 'beat' or keeping time for music, but is has numerous other uses. Some photographers use a metronome when enlarging and printing, for example, to 'count' seconds audibly rather than have to look at a clock.

Now a metronome is one of those examples of a mechanical device which does something which can be performed as well, or better, by an electronic circuit—and in a much simpler and more compact 'package'. An electronic metronome, for example, is very simple to make, needs no winding up or other attention once it is wired up and can give both an audible 'beat' note from a loudspeaker and flash a light on and off at the same rate. Besides having definite use as an instrument as described above, it is also a general interest project to make—as well as demonstrating your skill in practical electronics!

Electronics, we know, remains a mystery to many people—starting from how to 'translate' a circuit diagram into a practical layout for wiring up. To produce working electronic units it is not necessary to know *how* such circuits work, but merely how to wire up such a circuit correctly With most published designs this involves mastering the technique of making printed circuits or at least tagboard units to which the components can be mounted. We aim to reduce practical electronics to the same simplicity as basic modelling, so that anyone can tackle the job straight away and make a success of it.

The complete circuit diagram for the electronic metronome is shown in Fig. 1, together with a list of components required. We shall describe two separate methods of building—one a 'modelling' method using balsa as a baseboard; and the other a proper 'electronic engineering' method with printed circuit assembly but employing specially prepared printed circuit material known as 'Veroboard'. You can choose whichever method you prefer —or feel most competent to tackle.

Balsa construction

The theoretical circuit of Fig. 1 is shown as a full size layout for assembly in Fig. 2, the base being a panel of hard $\frac{1}{4}$ in. sheet balsa cut to a size of $5\frac{1}{2}$ in. by 3 in. A similar size panel is also required in hard $\frac{1}{8}$ in. sheet balsa for the top, this having two holes cut in it as shown to mount the bulb holder and potentiometer; and also a cut-out near one end to provide an opening for the speaker.

The various stages in assembly are then shown in Fig. 3. Having cut out the base and top panels, trace the layout drawing on to the botom panel (or cut out and stick on to the balsa). Copper nails $\frac{1}{2}$ in. to $\frac{5}{8}$ in. long are then pushed into the balsa at each of the connection points (black dots). The top and bottom rows of nails are connected with 5 amp fuse wire, taking a turn around each nail.

This completes what is, virtually, a very simple version of a 'printed circuit'.

The first transistor (TR1) in the circuit is a 'power' type and is shaped like a disc with an extended base. This is cemented upside down on the balsa panel, using a dab of Bostik or similar adhesive (not balsa cement). It has only two terminal tags emerging from its base (now uppermost), marked B and E. These are the 'base' and 'emitter' leads, respectively. The third or 'collector' connection is actually made to the bottom part of the transistor casing itself. In this circuit this connects to the bulb, so the lead for the bulb is a length of insulated wire soldered to the bottom part of the transistor mounting flange. The 'E' tag of the transistor is connected to the nearest copper nail by a short length of wire soldered in place. One end of resistor R1 solders to the 'B' tag of the transistor. All the other resistors and capacitors can then be soldered in place to their various connection points as shown in Fig. 2. The loudspeaker is mounted by cementing in place to the base with Bostik.

The two small transistors (TR2 and TR3) are fitted last of all. Be sure to identify the leads correctly. Cut off these leads to a convenient length, but *at least* $\frac{1}{2}$ in. long, and then solder the transistors in place.

This leaves two components over—the bulb holder and potentiometer. These are mounted to the top panel and then connected to their appropriate points on the main circuit assembly with short lengths of insulated wire. Cement 1 in. by $\frac{1}{4}$ in. balsa strips to the base, as shown, and finally cement the top down to complete the 'cabinet'. The metronome is then ready to work as soon as a battery is connected. (We wired in a push-switch, too.)

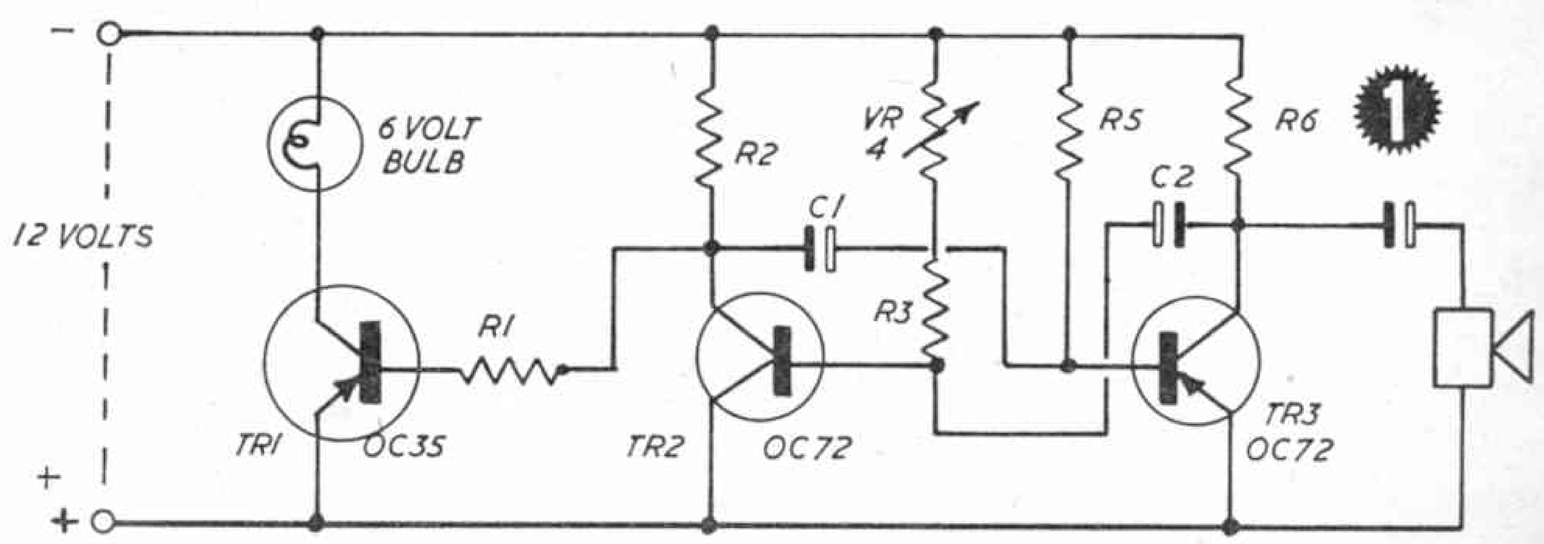
A 12 volt battery is required and thus must be connected *the right way round* to the two end terminals, so mark the polarity clearly on the outside of the case. Reversed polarity will damage the capacitors and transistors.

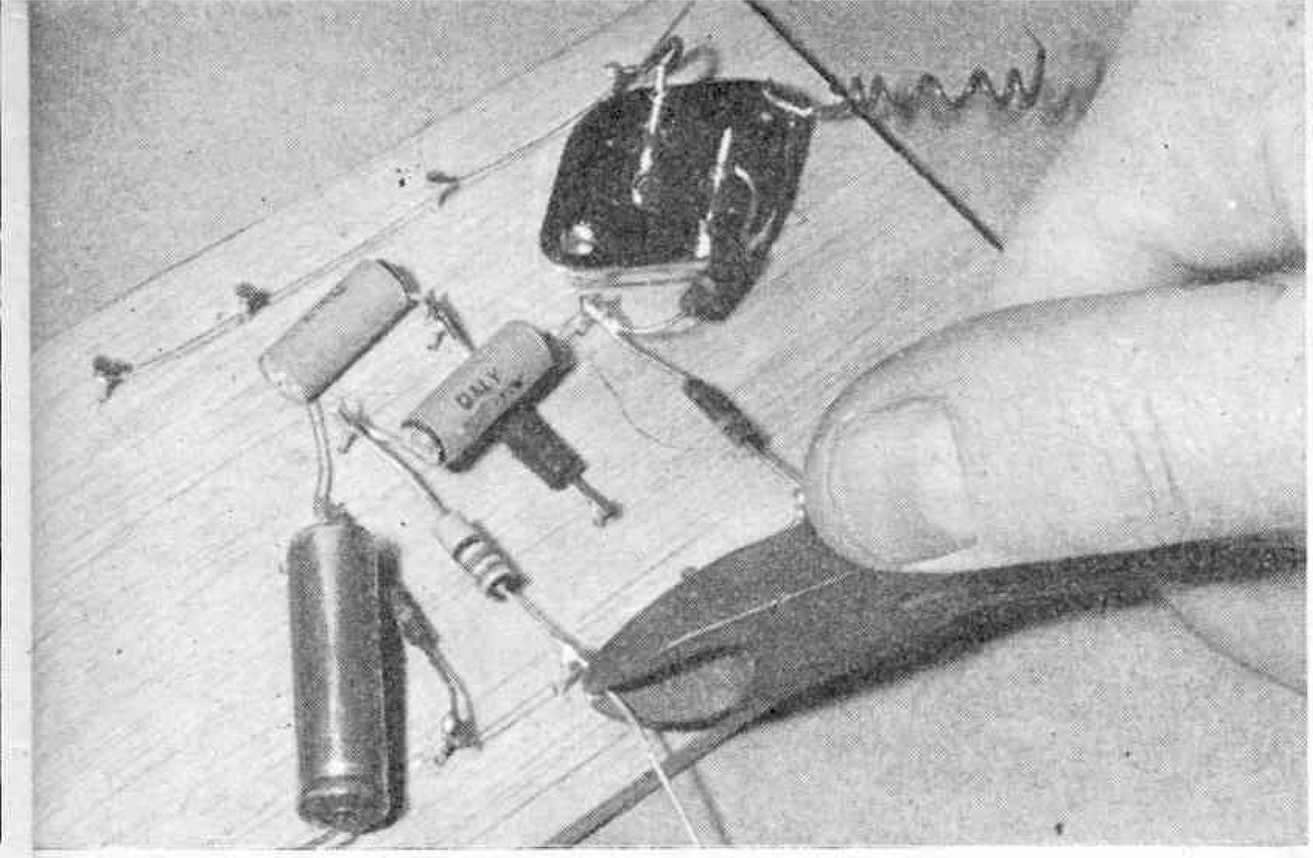
With the battery connected the metronome should start to 'tick' straight away, with the bulb flashing on and off in time. The rate of beating can be adjusted by turning the potentiometer control and the complete range of beat rate should be from about 20 beats per minute (i.e. one every three seconds) to about 180 beats per minute (three beats per second). For a 'seconds timer' simply adjust the potentiometer until the beats occur at exactly one second intervals, as timed by a watch. If you are using the metronome for photographic printing, cover the bulb with a piece of orange cellophane to make it a 'safelight'. We used the red plastic top and part of the body of the container that the nails came in as a 'safelight cover' (from Woolworths).

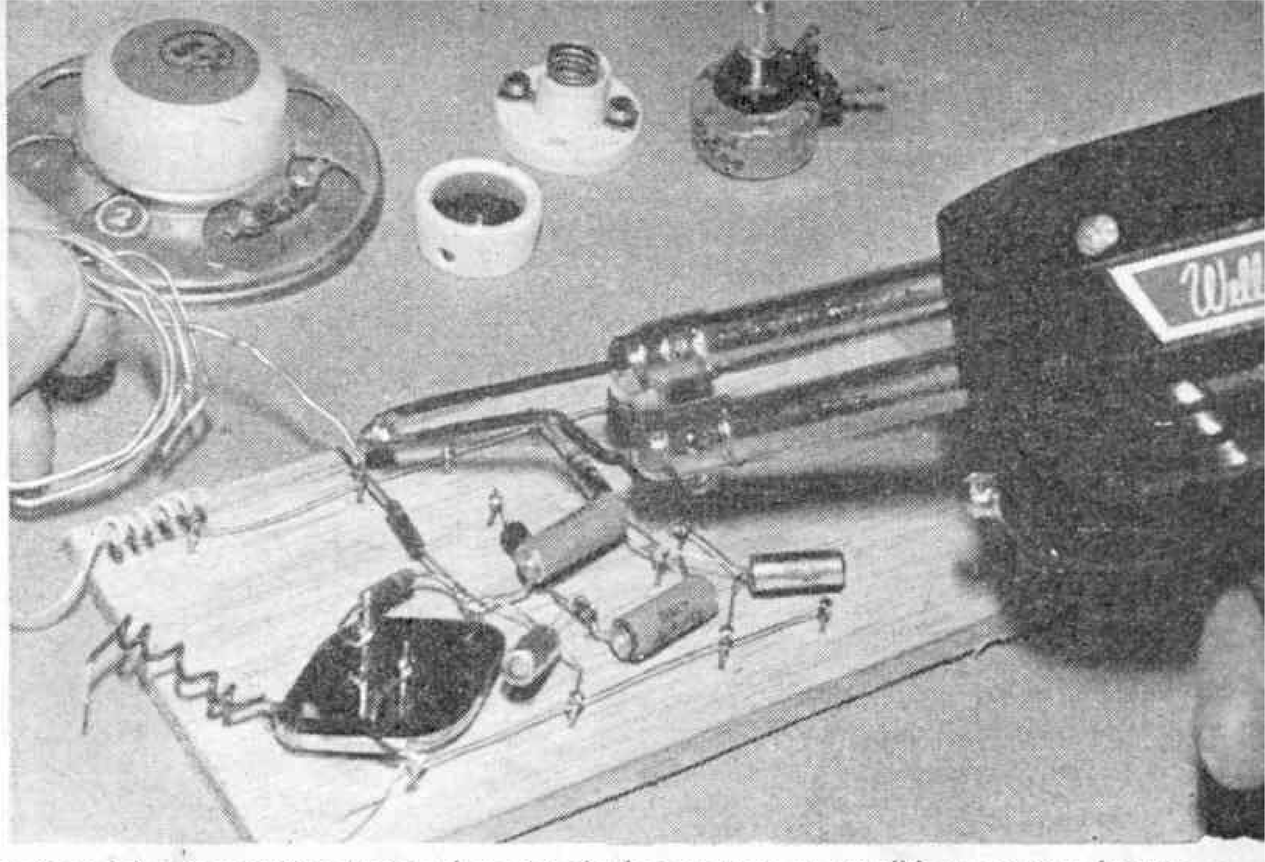
Printed circuit assembly

This uses 'Veroboard', which is a prepunched printed circuit material with parallel strips of copper foil on one side. A panel of Veroboard $3\frac{1}{2}$ in. by $1\frac{1}{2}$ in. is required. The copper strips are then cut with a spot face cutter (or merely scraped away with a knife blade) to isolate those strips required for mounting the components. These 'working' strips are shown shaded in Fig. 4.

Fig. 4 is a view of the assembly from the plain side of the Veroboard, on which the components are mounted. The 'working' copper areas (shaded) are as they appear underneath. To obtain an exact pattern of the copper side, make a tracing of the shaded areas and *turn the tracing paper over* to mark the pattern on the copper side.





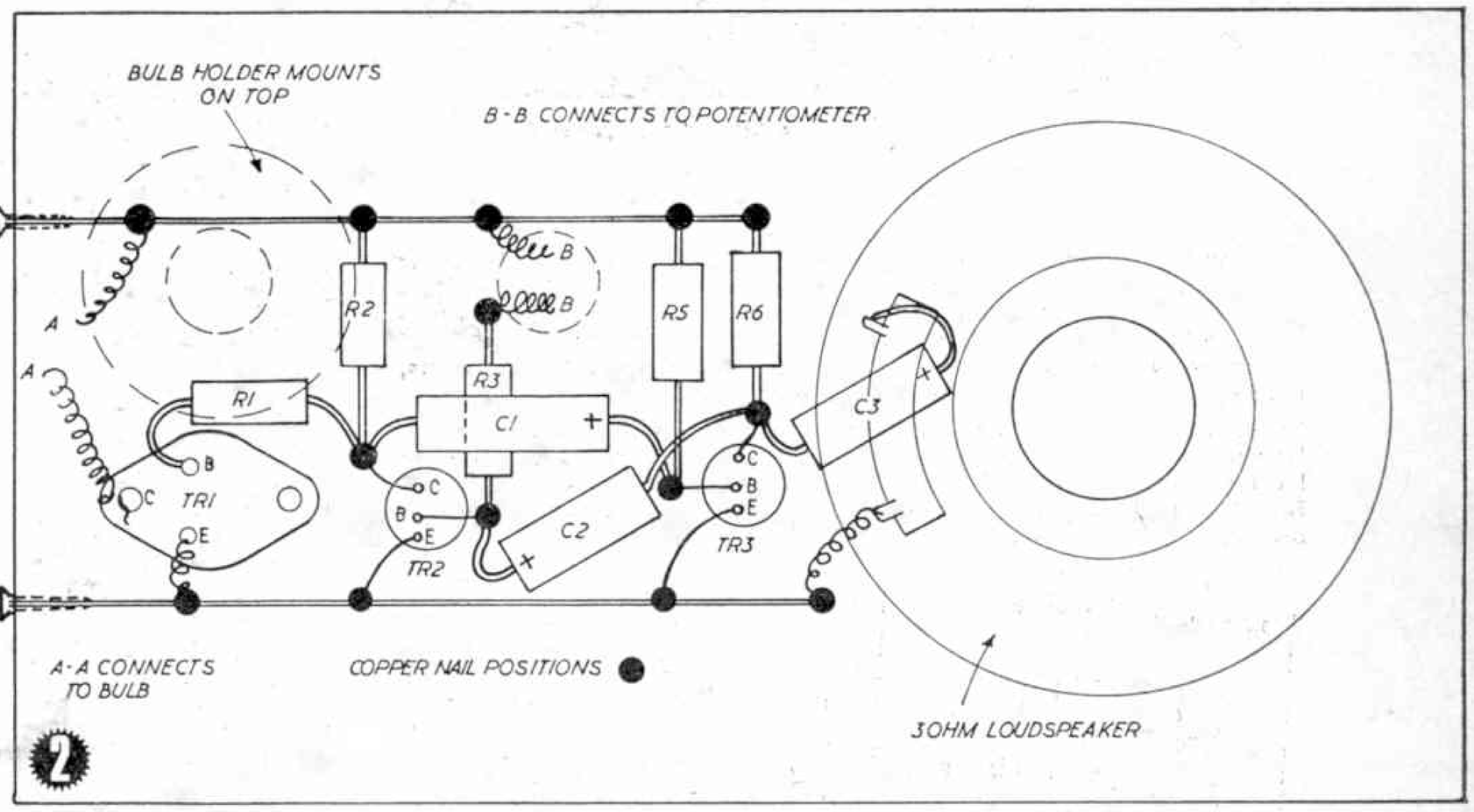


Clip the component wires to length after soldering them in place. Transistors are soldered last—use the minimum necessary heat and remove the iron as soon as possible to prevent damage

The bulb holder is mounted on a separate face panel, as before, only this time the face panel should be cut from $\frac{1}{16}$ in. or $\frac{3}{32}$ in. Paxolin or similar material. The potentiometer is mounted on the Veroboard itself. The speaker is mounted separately by cementing to the bottom of the cabinet with Bostik. Speaker and bulb holder are then connected to the printed circuit by insulated wires soldered to the appropriate panel points.

The complete assembly mounted in a cabinet is shown in Fig. 5. The cabinet can be a simple wood box—balsa, if you like, with the printed circuit panel supported at a suitable height—i.e. to allow the spindle of the potentiometer to emerge through the front face so that a knob can be fitted.

Note: Veroboard is available from Proops Brothers Ltd., 52 Tottenham Court Road, London, W.1.



2

Components List for Metronome

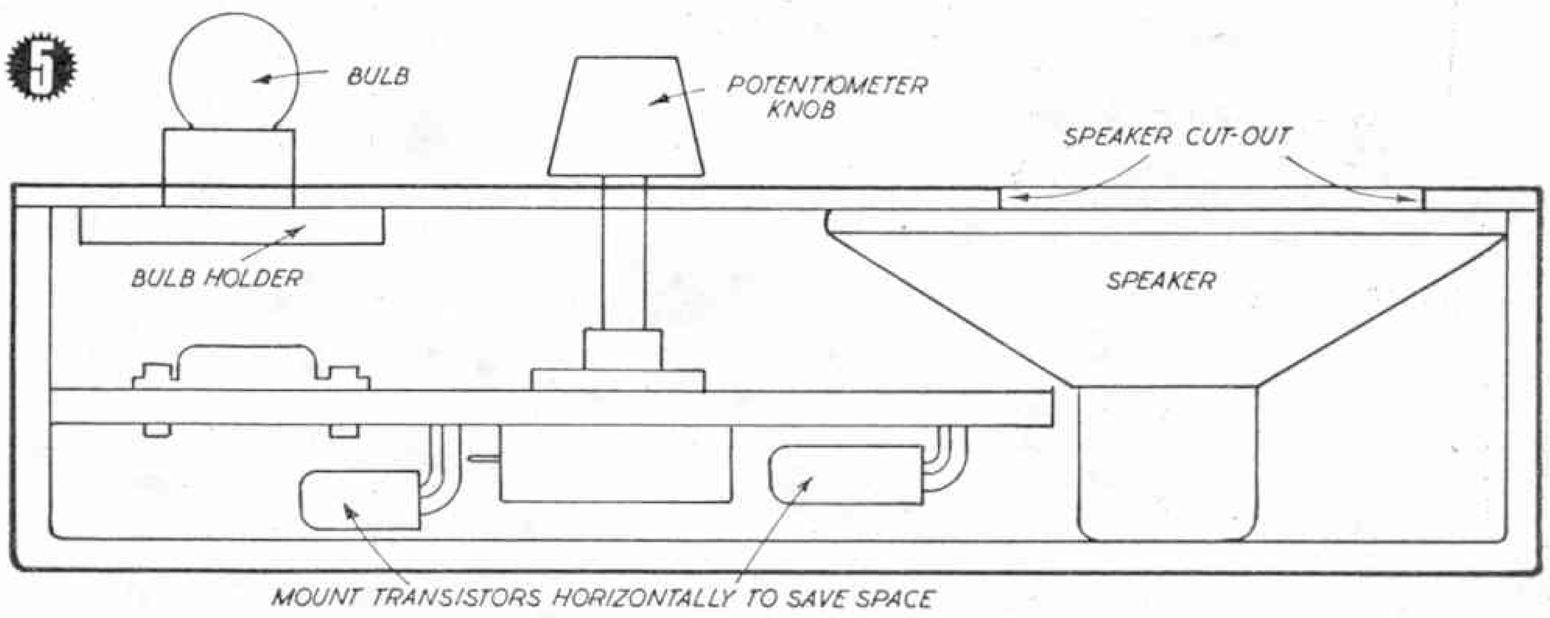
RESISTORS all miniature type

R1 —2·2 kilohm
R2 —1 kilohm
R3 —10 kilohm
VR4—250 kilohm variable (potentiometer and knob)
R5 —33 kilohm
R6 —1 kilohm

CAPACITORS minature type

C1 —8 microfarad electrolytic
C2 —8 microfarad electrolytic
C3 —300 microfarad electrolytic
TR1—Mullard OC35
TR2—Mullard OC72
TR3—Mullard OC72
Loudspeaker—3 ohm, miniature type
Bulb—6 volt, 50-60 milliamp and holder

Note: as many as up to six additional bulbs can be connected in parallel with the first bulb to flash together.



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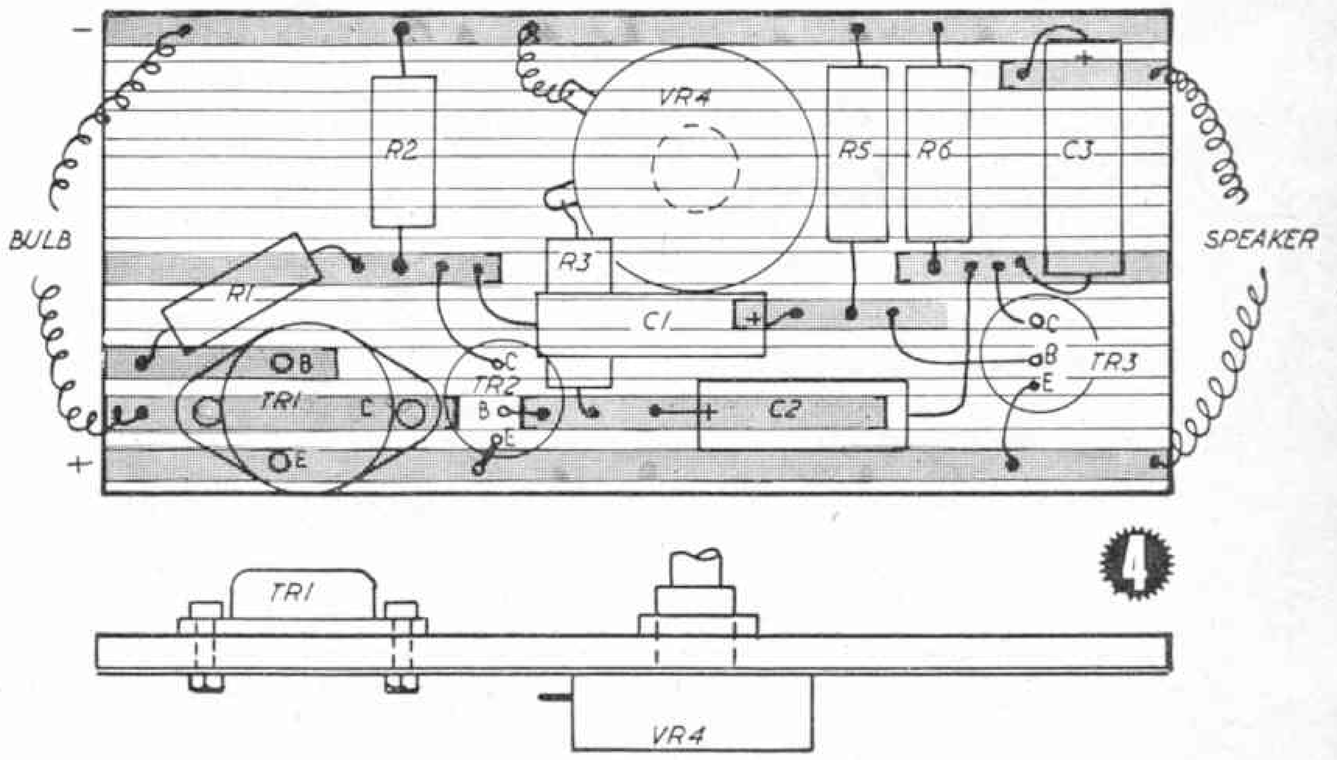

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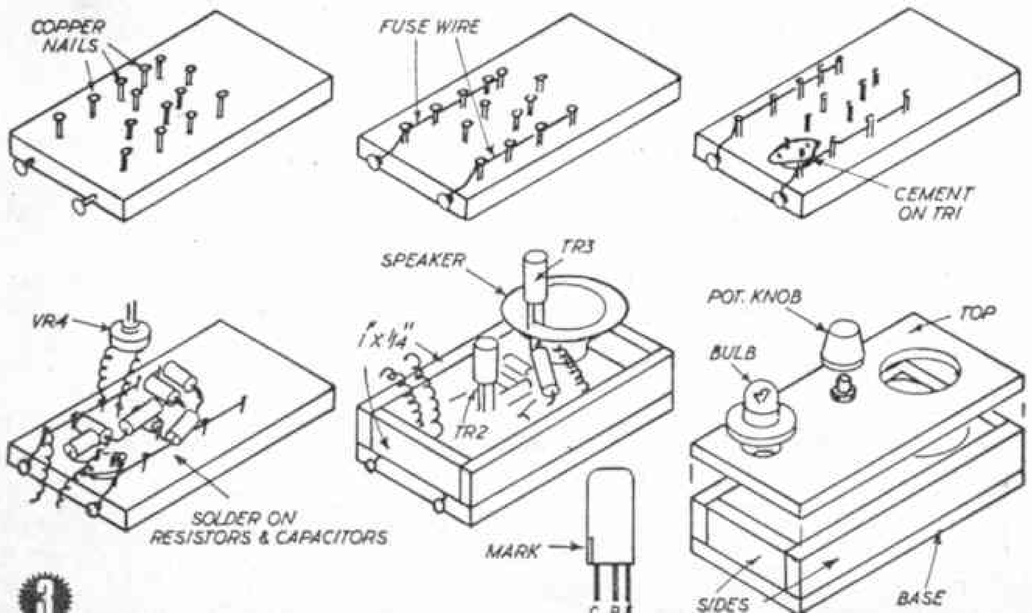

3

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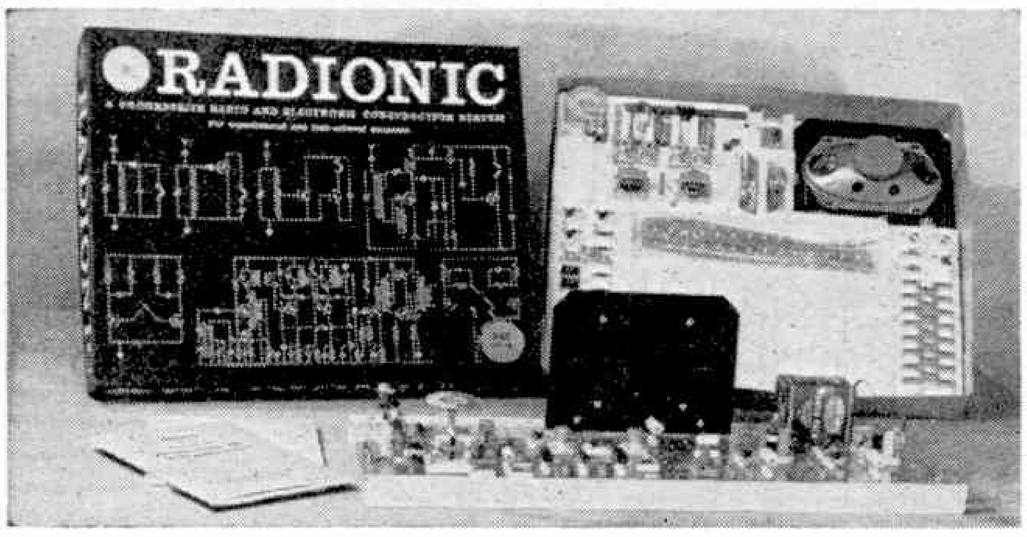

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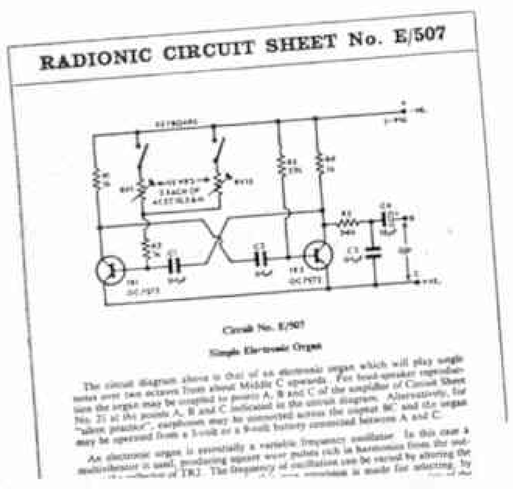
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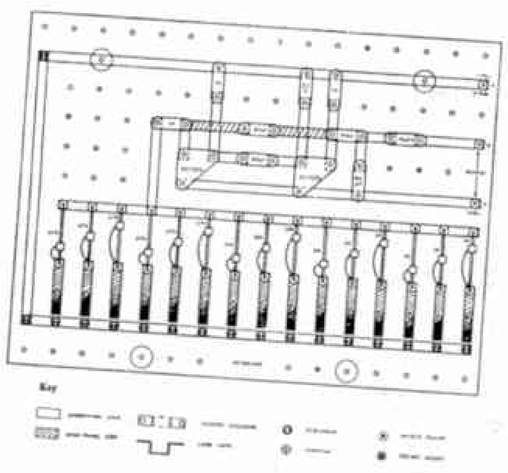
Circuit No. E/507

Simple Electronic Organ

Theoretical Circuit



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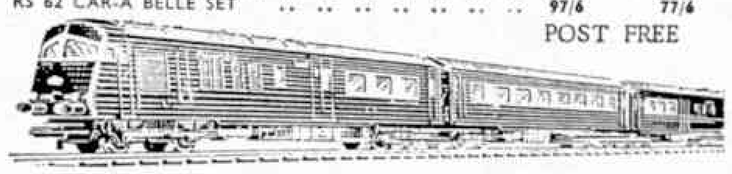

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FUN & GAMES

Please turn to page 35 for answers to puzzles on this page

RIDDLE BOX

If a girl falls down, why can't her brother help her up?

He can't be a brother and assist her (a sister), too.

* * *

What's green and goes b-z-z-z-z?

An electric pickle.

* * *

What's the best colour in which to keep a secret?

Invisible.

* * *

Why is the letter D so important to us at a wedding?

We cannot be wed without it.

BIRDS & BEASTS?

In a certain woodland area inhabited only by squirrels and bluejays there are 36 heads and 100 feet. You are asked to determine how many squirrels and how many bluejays live there.

All specimens are perfectly normal—there are no one-legged bluejays or two-headed squirrels.

Answer: There are fourteen squirrels; twenty-two bluejays.

TONGUE TEST

Lettie lugged a level load of lovely lettuce.

TRICKY TEASERS

A Make, if you can!, a word comprising 3 R's, 3 E's, an F and a D. If you can do it in under five minutes you deserve an extra slice of cake.

• • • •

B Going for a ride? Hidden in the jumbled letters below are seven different modes of travel. See if you can find the seven methods of transport, using the letters below once only.

A A A A B B C C C E H I I K L
N N O O R R R R S T U V Y

• • • •

C MYSTERIOUS! The solution here is an eight-letter word, and the only help we're offering is the fact that the alphabet has been numbered—i.e., A=1, B=2, etc—plus the following:

The first letter is L, which is 12 times my second letter.

The second is 1/5th of my seventh, and 17 less than my eighth.

The third is equal to three times the fourth, which in its turn is one less than the fifth.

Multiply the seventh value four times to get the sixth.

• • • •

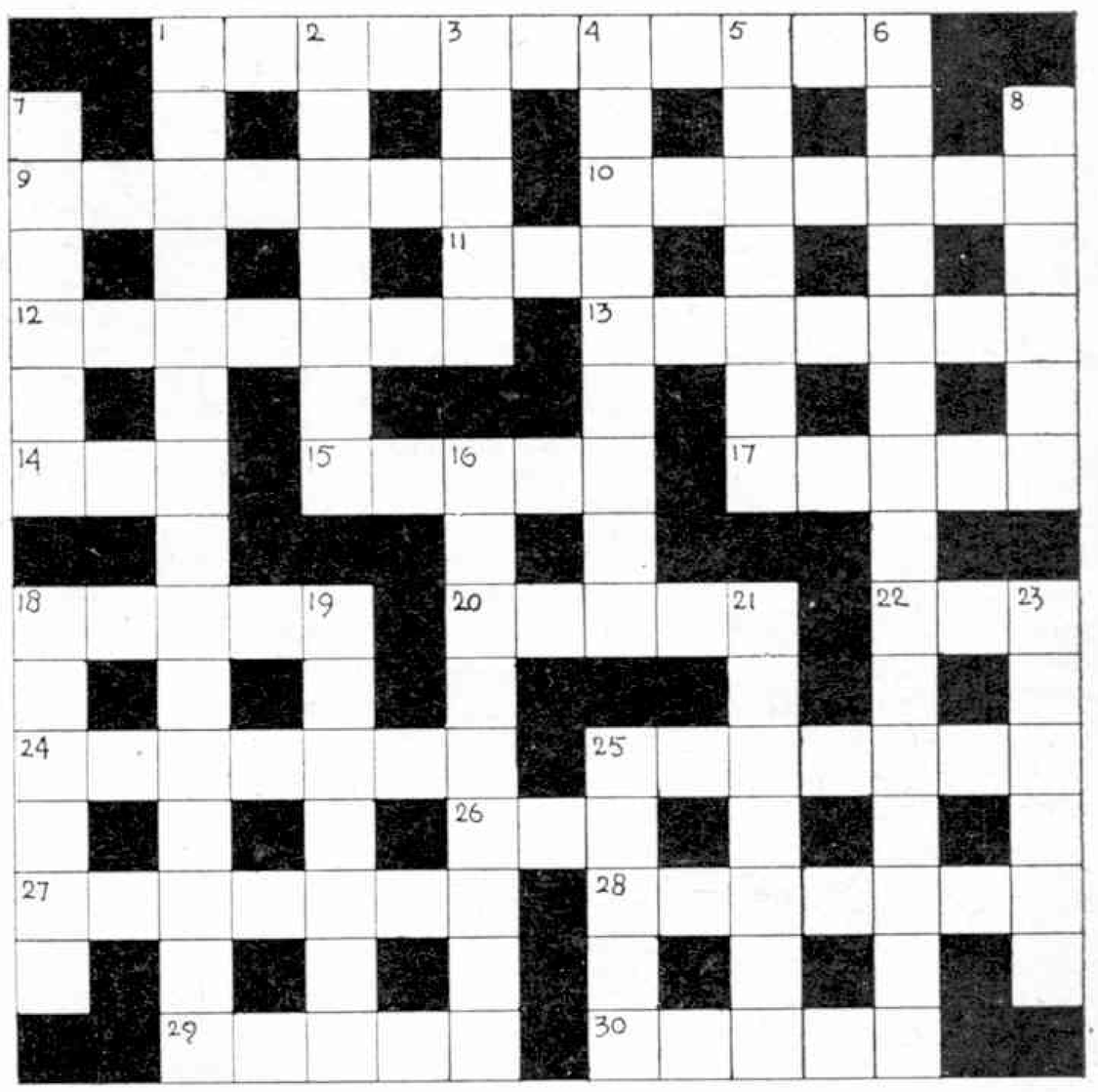
CROSSWORD PUZZLE NO 15

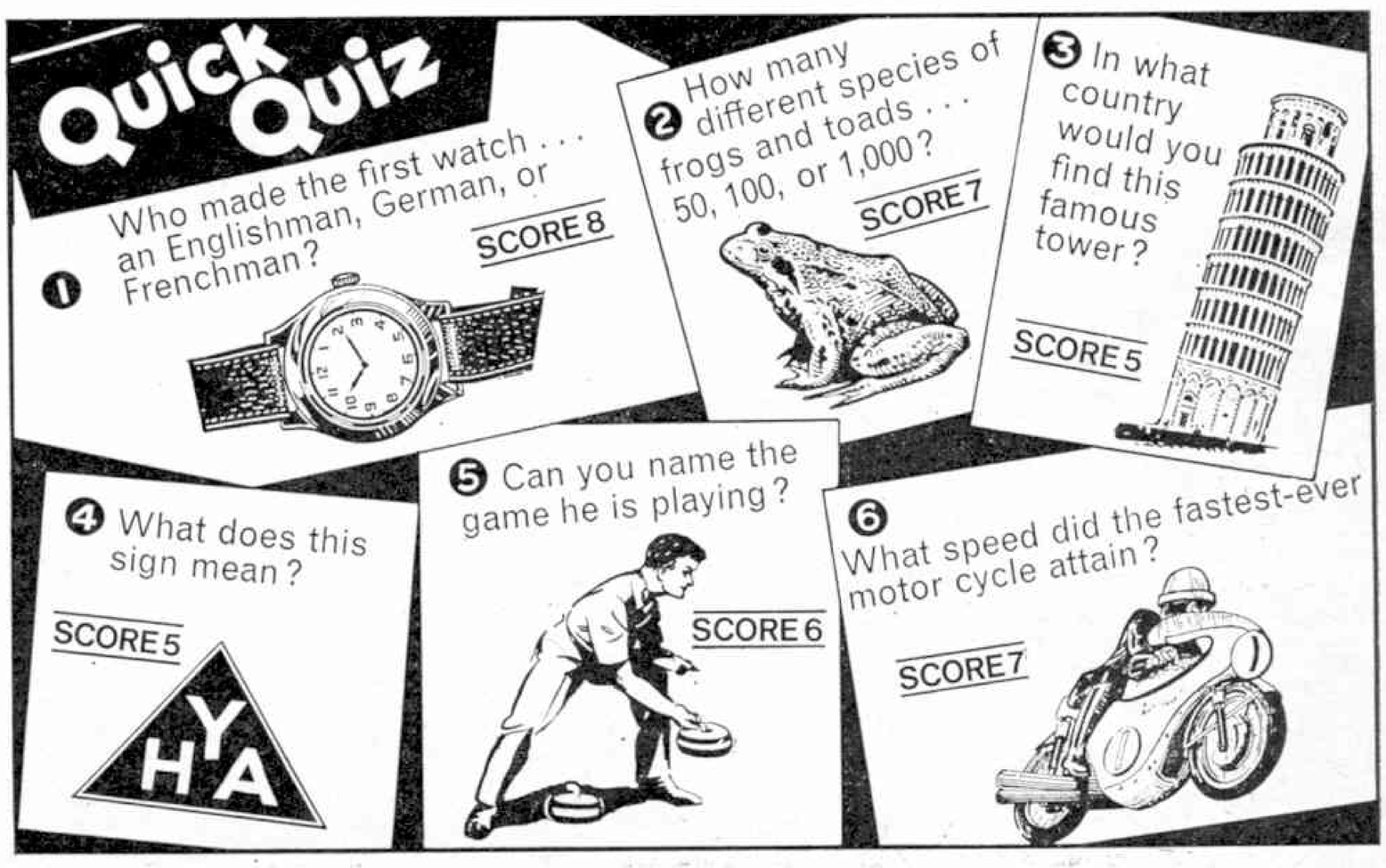
ACROSS

1 Changes
9 Nitrogen with three parts of hydrogen
10 Time for play
11 To expire
12 All car doors have these
13 French ticket-office window
14 Distress signal
15 Serious play
17 It's often done to bullfighters
18 Seen on canals
20 An old meanie!
22 An act of theft
24 A handicraftsman
25 Part of S. American city
26 To institute proceedings against
27 One who puts himself first
28 Permitted
29 It's sweet
30 In a melancholy way

DOWN

1 Orders issued by the powers-that-be
2 Clinked
3 Highways
4 Speedy messages
5 Judgment or estimation
6 This name was formerly used on all trains south of London
7 Deep emotion
8 You feel this after sleep
16 Carpets are made here
18 Vanquished
19 Coming next after
21 A feeling of irritation
23 Sulks
25 Tight trousers




Quick Quiz
1 Who made the first watch . . . an Englishman, German, or Frenchman?
SCORE 8
2 How many different species of frogs and toads . . . 50, 100, or 1,000?
SCORE 7
3 In what country would you find this famous tower?
SCORE 5
4 What does this sign mean?
SCORE 5
YHA
5 Can you name the game he is playing?
SCORE 6
6 What speed did the fastest-ever motor cycle attain?
SCORE 7

FIRST OVER THE HIGHEST

BY JOHN W. R. TAYLOR

THE 1914-18 war was so terrible, and ended with such a complete victory for the Allies, that it was known for many years as 'the war to end wars'. Having won it, the British government saw little need to buy new military aeroplanes. So, for year after year in the 'twenties, the Royal Air Force soldiered on as best as it could with aircraft that had been designed and built during the war.

Typical of the left-overs was the D.H.9A, an open-cockpit two-seat biplane which could be, and was, used for everything from bombing and reconnaissance to army co-operation and even ambulance duties. So short of aeroplanes was the R.A.F. that if a D.H.9A crashed the wreckage was put in a box and sent to the Westland Aircraft works at Yeovil, so that the bits could be rebuilt into something that would fly again.

At last, it was clear that even the most thorough rebuilding could no longer keep the veteran aircraft in service in sufficient numbers. The Air Ministry told the British aircraft industry that it was in the market for a replacement, using as many D.H.9A parts as possible, to keep down costs.

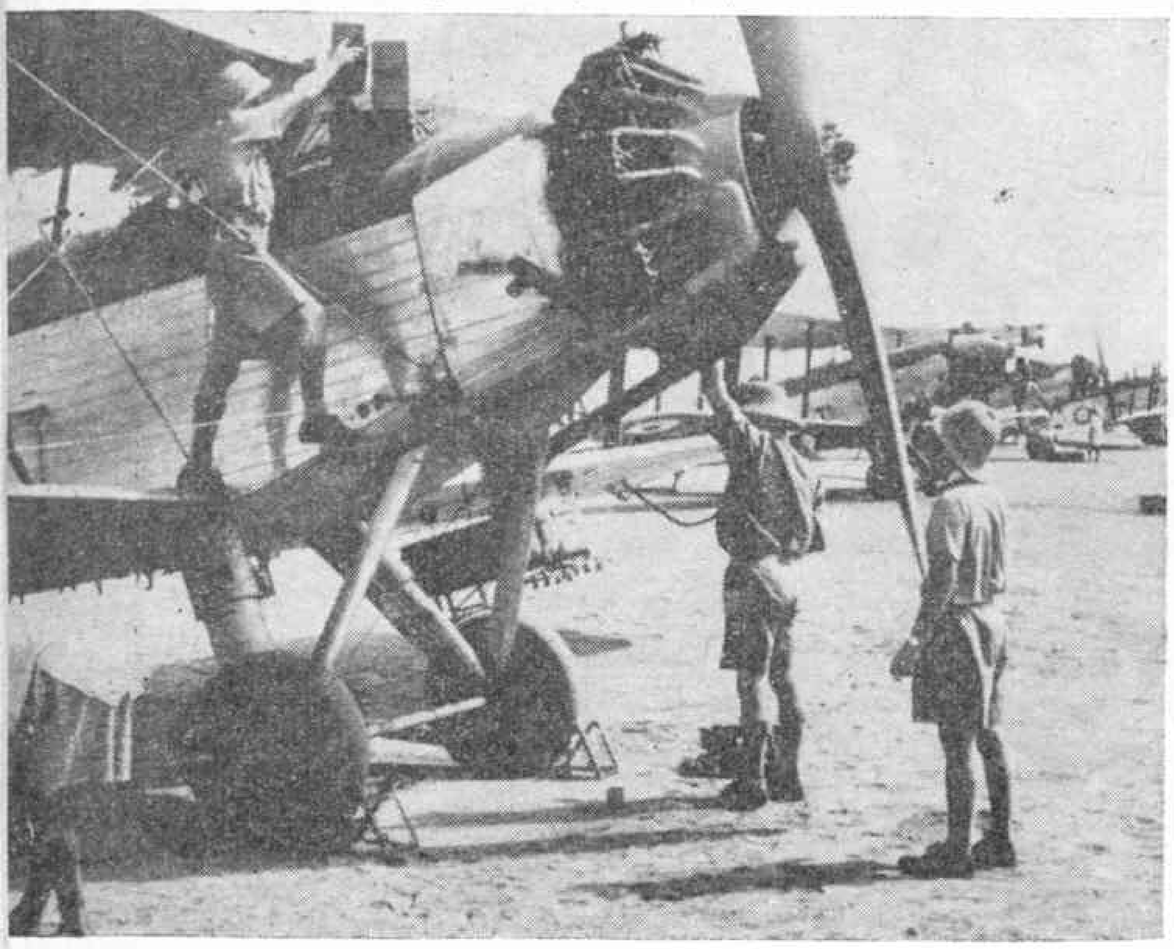
Business was so bad that seven companies built prototypes in an attempt to win the contract. All were sent to the official flight test centre at Martlesham Heath and, in due course, Westland learned that their aircraft, known as the Wapiti, had been chosen. They received an immediate contract for 25, and went on to build a total of 517 Wapitis for the R.A.F. during the five years from 1927 to 1932. Another 38 were sold to Australia, four to China and four to South Africa, where the type was also built under licence.

As a long-suffering workhorse, that could be loaded with all kinds of equipment and weapons for overseas service, the Wapiti proved as successful as its predecessor, the D.H.9A. Yet the first flight of the prototype, early in 1927, had been anything but a success. The test pilot, Major L. P. Openshaw, dis-

Over Everest! The Houston-Westland P.V.3

It started out as bit of a lash-up. A makeshift development of a World War 1 aeroplane, but it eventually led to the first over-Everest flight and became one of the R.A.F's most faithful workhorses. Turn to page 20 for our Wapiti plastic project.

Servicing No. 31 squadron Wapitis in India



The long-fuselage Wapiti V mentioned in the story

covered that the aircraft had practically no directional control and the only way in which this could be remedied was by making the tail surfaces larger.

Until this happened, the Wapiti retained almost unchanged the wings, struts, tail unit and undercarriage of the D.H.9A, introducing only a new fuselage and a 420 h.p. Bristol Jupiter VI radial engine in place of the 9A's 400 h.p. Liberty. Wind tunnel tests had suggested that the design should fly well. Unfortunately, when the structure was drawn in detail in the design office, the draughtsman left out one entire section of the rear fuselage about 30 inches long. This explained why the tail surfaces of the prototype had to be enlarged before the aircraft could be flown under proper control!

The variants

Production Wapitis had the same short fuselage as the prototype, and the last major link with the D.H.9A vanished when the Air Ministry decided to switch to all-metal construction, leading to the Wapiti Mk. II with metal wings and a 460 h.p. Jupiter VI. The other main production versions were the Mk. IIA with Jupiter VIII, for service overseas, and the Mk. VI dual-control trainer; but there were many special and experimental versions, including a two-seater equipped for the personal use of the Duke of Windsor when he was Prince of Wales.

Most interesting of all the 'specials' were the two Mk. V's, which were also the handsomest of the family as they had the longer fuselage which should have been standard from the start. The first one was included in the 'New and Experimental' enclosure at the 1930 R.A.F. Display and achieved little further fame, except that it flew for a time with a Bristol Draco diesel engine and four-blade metal propeller. The second Mk. V, registered G-AAWA, went on to earn for itself a place among the great aircraft of flying history.

In addition to its long fuselage, G-AAWA differed from other Wapitis in having a 550 h.p. Armstrong Siddeley Panther II engine, brakes, a larger rudder and a tail-wheel instead of the usual skid. It began its career by making a demonstration tour of the Argentine and Uruguay in 1931, in the hands of Westland's chief test pilot, Harald Penrose.

On its return to the U.K., it was again re-engined, this time with a 655 h.p. Pegasus 4, and its designation was changed to Wapiti Mk. VII or P.V.6. Flight tests showed that its handling qualities far exceeded those of the standard Mk. IIA and, with wheel spats fitted, it was 20 m.p.h. faster. The Air Ministry could not afford to order the new version into production, but had 55 Wapitis converted into copies of the Mk. VII prototype and gave them the name Wallace Mk. I.

Having given birth to a new service type, the prototype might well have passed into honourable retirement, but its finest hour was yet to come.

Lady Houston, whose generosity had made it possible for Britain to win the Schneider Trophy outright in 1931, had offered to put up the money to pay for an attempted flight over the 29,028 ft. peak of Mount Everest, the highest point on earth. It was to be a scientific venture, rather than a gimmick, to show that camera-carrying aircraft could photograph even the most inaccessible places for subsequent study.

Minus 61° Centigrade!

The flight had been made practicable by Bristol's new highly-supercharged Pegasus I.S.3 engine of 525 h.p. After considering many different airframes, the organisers of the expedition decided to fit these engines in the Westland P.V.3—an experimental carrier-based torpedo-bomber—and our old friend the Wapiti V G-AAWA, alias Wapiti VII, P.V.6, Wallace I prototype and now Houston-Wallace G-ACBR.

The veteran aircraft again underwent modification. The spats were removed, the tail-wheel was replaced by a skid and the rear cockpit was converted into a primitive enclosed cabin for a cameraman. Despite the need to climb to over 30,000 ft., the pilot continued to sit out in the cold. Just how cold was discovered by Harald Penrose when he took the aircraft to 37,500 ft. in December 1932, and recorded temperatures down to minus 61 degrees Centigrade.

Clearly, the Houston-Westland (P.V.3) and Houston-Wallace (P.V.6) had adequate performance for their task; but the grim record of attempts to climb Everest left little doubt that the mountain would have a few tricks up its sleeve and plenty of people predicted disaster for the expedition. Undeterred, the two crews clambered on board the aircraft in their cumbersome special flying suits on April 3, 1933, and began their long climb towards the Himalayas. Pilot of the Houston-Westland was Sqn. Ldr. The Marquess of Douglas and Clydesdale, with the man who first conceived the venture, L. V. S. Blacker, as his observer. The Wallace was flown by Flt. Lt. D. F. McIntyre, accompanied by S. R. Bonnett, a Gaumont-British film cameraman.

If the hearts of the four men sank a little when they saw ahead of them Everest's immense plume of ice particles, whipped off the summit by prodigious winds, this was nothing to what happened when they were within 150 seconds flying time of the fearsome peak.

Near disaster

At the time, Blacker was taking photographs through an open hatch in the floor. Suddenly, the aircraft seemed to fall away beneath his feet as the P.V.3 was struck by a powerful downdraught. Grabbing hold of a strut, he watched goggle-eyed as the altimeter needle swung down smartly through a couple of thousand feet. The crags of the South Peak now appeared to be scraping past the open hatchway; yet he continued to photograph the jagged black rocks and the yellowy-red of Everest itself as it passed by his open window.

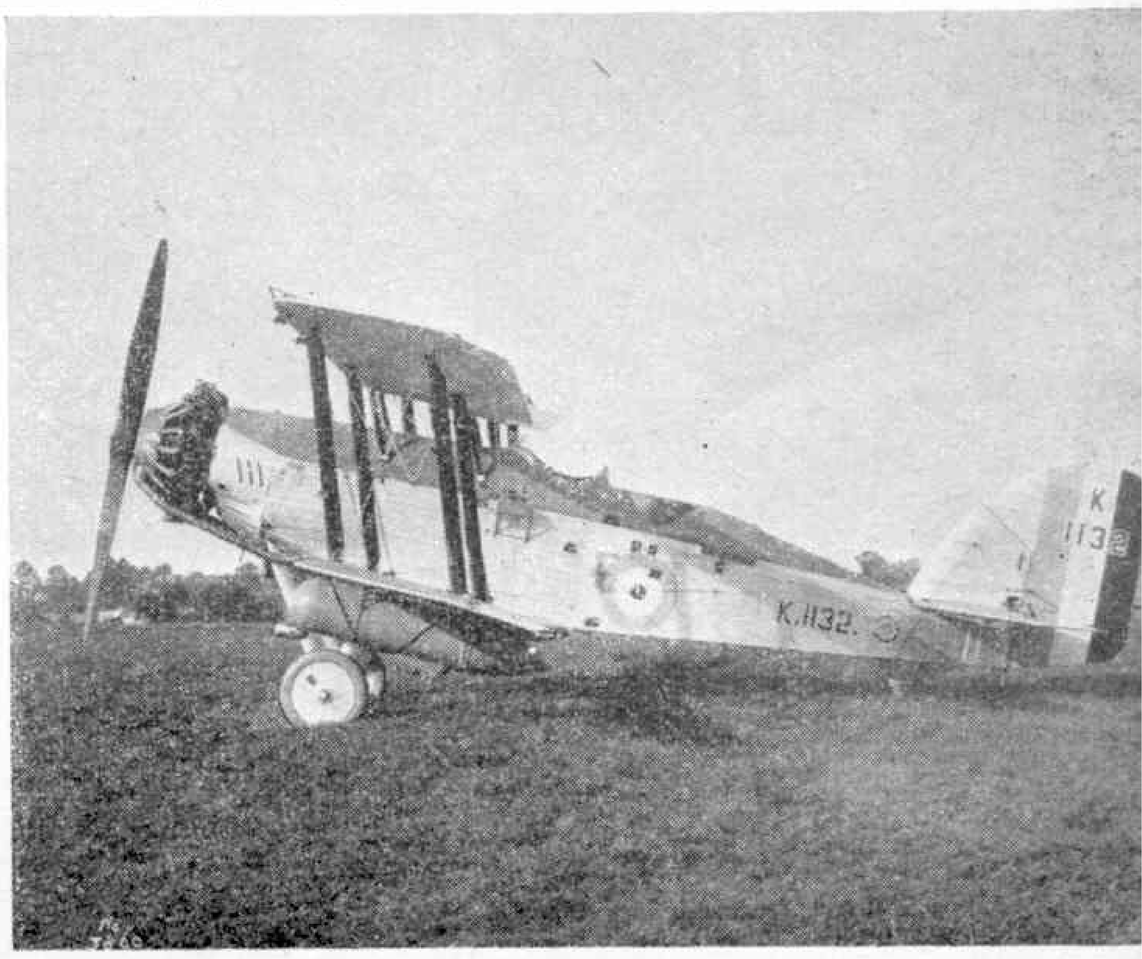
The two aircraft cleared Everest by a mere 100 ft. Most pilots would have had enough and returned home, as the job they had come to tackle had been done. But both crews returned to Everest on April 19, to enable better photographs to be taken from a greater height.

Where are these famous aeroplanes now? Well, the Houston-Westland was used for a time by Bristol as an engine test-bed. G-ACBR was converted back into a standard Wallace Mk. I and sold to the R.A.F. Eventually, both machines finished up in the breaker's yard. *Sic transit gloria!*

Data (Houston-Wallace): Span 46 ft. 5 in.; length 34 ft. 6 in.; height 11 ft. 6 in.; loaded weight 5,750 lb.; max. speed 158 m.p.h.; ceiling 37,500 ft. (Houston-Westland): Span 46 ft. 6 in.; length 34 ft. 2 in.; empty weight 3,580 lb.; loaded weight 4,870 lb.; max. speed 163 m.p.h.; ceiling 35,000 ft.

In new guise as the P.V.6

A Wapiti with special fuel tanks used for long distance desert patrol work



Photographed against a 'homely' background, the latest Dinky makes a fine picture

FORD GERMAN STYLE

On June 16th, 1903, the Ford Motor Company was officially incorporated. Henry Ford, its founder, was a man with ideas, but how could he have foreseen that his modest business, based at Dearborn, Michigan, in U.S.A., would grow into the world's biggest manufacturer of automobiles?

Ford owed his success to the now legendary Model T, nicknamed 'Tin Lizzy', which sold in huge quantities all over the world. The world, however, has progressed a long way since those early days, but the Ford Motor Company has kept pace with changes, and has often been instrumental in creating the changes itself, with the result that it has prospered and grown—so much so, in fact, that a huge number of cars on the roads of Britain, as well as America, are of Ford manufacture. These, of course, are produced in this country by a British subsidiary of the parent company in America, but Britain is not the only outpost of the Ford empire. Germany also falls into this category with Ford Werke A.G., of Cologne.

We, in Britain, tend to overlook the German Ford company, but they do produce a very comprehensive range of top quality cars which are increasing in popularity all over the Continent. Only one version, however—the Taunus 17M—is of interest to us here as this vehicle serves as the inspiration for the latest Dinky Toys release, No. 154 Ford Taunus 17M.

This model is, in my opinion, one of the most attractive replicas to come off the Dinky Toy production lines. It's not what could be described as a strikingly 'showy' model, nor is it blatantly 'gimmicky', despite the fact that it carries nearly all the special Dinky features, plus an entirely new feature of its own. It's simply an extremely appealing and detailed scale reproduction finished in a subdued, yet striking, soft-yellow gloss enamel with white roof and red interior that is somehow just right for the car.

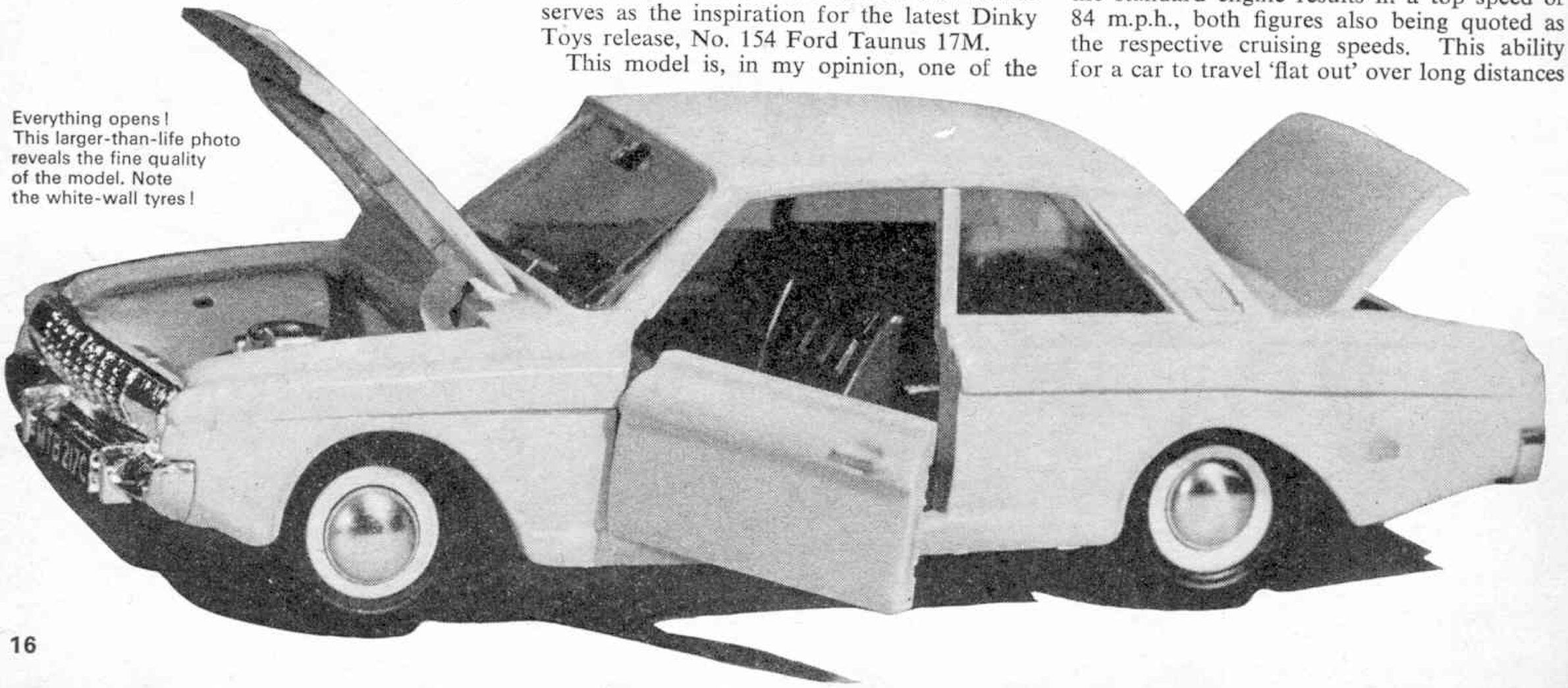
Inspecting the model as a whole, the quality of the casting is impressive. This is clear-cut and sharp, and there are two well-fitting opening doors. Also opening are the boot and bonnet lids, the latter covering a detailed, aluminium-finished 'engine'. At the front, both the bumper and radiator are plated as also are the rear bumper and the body panel between this and the boot lid. Number plates are included as well as the usual Prestomatic steering and four-wheel suspension. Fitted inside the model are windows, a steering wheel and seats, with the backs of the front seats tipping forward to allow access to the rear.

White-wall tyres

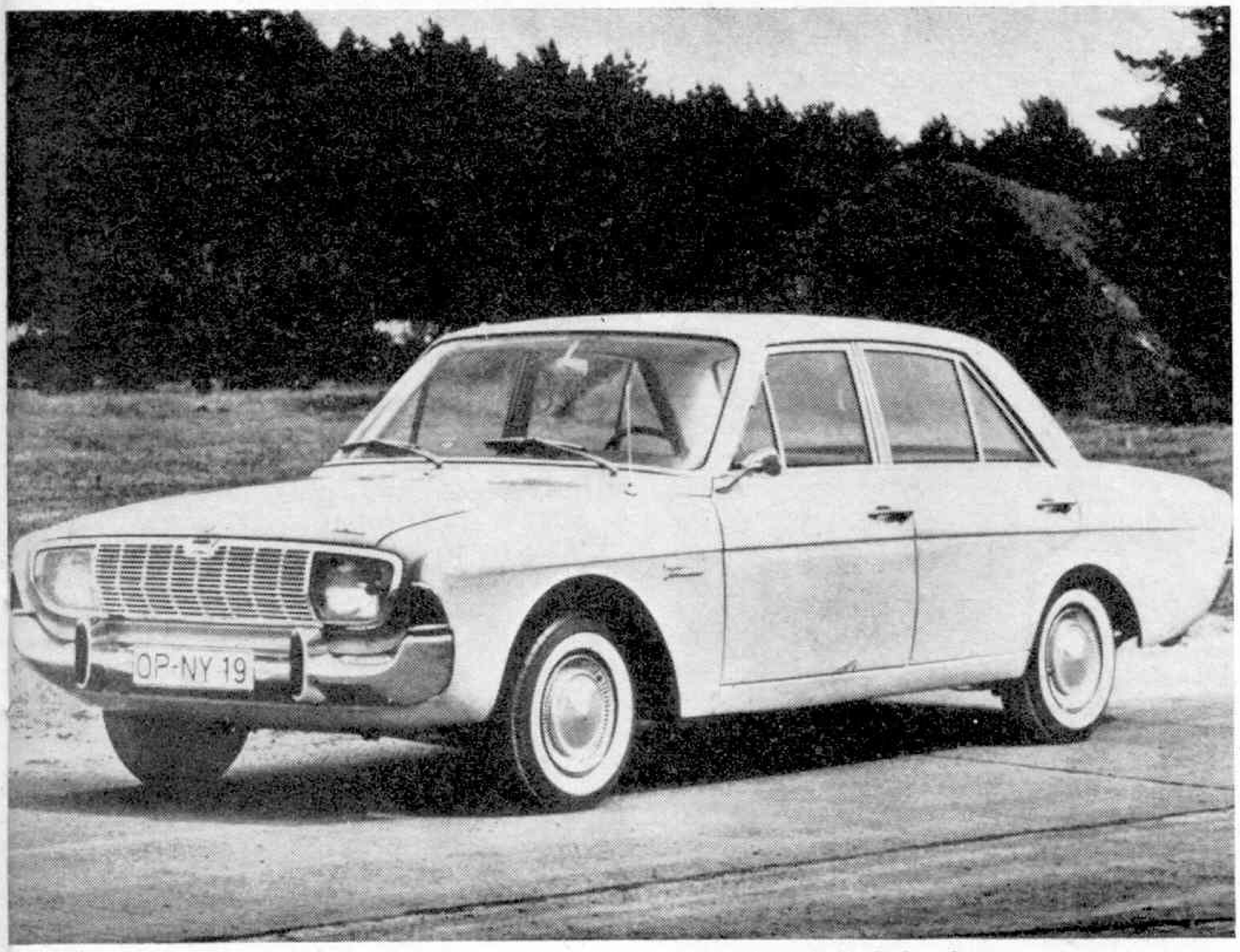
We come now to the entirely new feature I mentioned earlier, which takes the form of simulated white-wall tyres. I say 'simulated' because the tyres themselves are actually black. The wheels, however, are white and of a special design so that, when the tyres are fitted, the combination looks for all the world like white-wall tyres. This effect, coupled with realistic press-on wheel centres, seems to round off the model completely.

Turning to the real-life Taunus 17M, distribution of this car in the United Kingdom is handled solely by Lincoln Cars Ltd., of Brentford, Middlesex, a subsidiary of the Ford Motor Co. Ltd. At least four versions are available—a two-door saloon, a four-door saloon, a three-door station wagon and a five-door station wagon. The Dinky Toys model is based on the two-door saloon version, therefore we shall deal with this here.

Power is supplied by a 1,498 c.c. capacity V-4 engine that develops 67 horse power at 4,800 r.p.m. Drive to the rear wheels is via a three-speed and reverse gearbox, but a four-speed and reverse box is available if required. Also optional is a more powerful 1,699 c.c. engine developing 78 h.p. at 4,800 r.p.m. This gives the car a top speed of 90 m.p.h. while the standard engine results in a top speed of 84 m.p.h., both figures also being quoted as the respective cruising speeds. This ability for a car to travel 'flat out' over long distances



Everything opens! This larger-than-life photo reveals the fine quality of the model. Note the white-wall tyres!

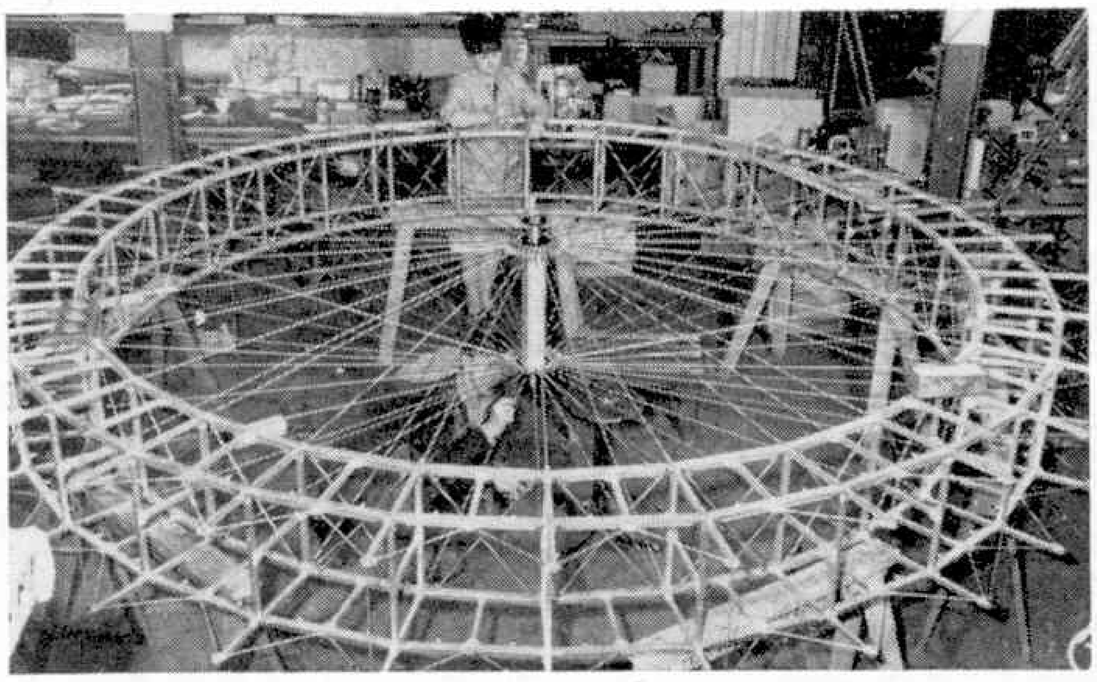


The full size four-door Ford Taunus 17M is aerodynamically designed

seems to be one regular point of difference between British and Continental vehicles. Most Continental cars will cruise at near maximum speed, whereas the cruising speed of by far the majority of British makes is considerably lower than the top speed.

Externally, the Taunus is extremely pleasing in shape—and so it should be. Its sleek and graceful styling has been scientifically designed to ensure that wind resistance is cut down to a minimum. This means easier handling, better acceleration and greater quietness inside, and is the result of exhaustive wind-tunnel tests. These tests enabled Ford engineers to detect and eliminate any 'rough spots' in body design which might have caused excess wind resistance.

Inside, the car is tastefully upholstered with wide bench seats for comfort. An extremely effective heating system is provided, as well as Flow-Away ventilation, similar to the Aeroflow ventilation system fitted to modern British Fords. Adjustable air vents mounted either side of the facia panel bring clean, fresh air into the car, while the stale air is drawn out through concealed outlets in the rear roof pillars. An important safety feature, incidentally, is provided by disc brakes fitted to the front wheels. Summing up, I would describe this vehicle as an excellent middle-range car, and one which is well-deserving of the popularity it has achieved.



THE BIGGEST WHEEL IN NUREMBERG!

Most important annual event in the toy-making world is the International Toy Fair held at Nuremberg in West Germany (reported elsewhere in this issue). Each year Mr. Bob Moy, head of Meccano's Model-building Department, has the task of producing a special display model to go on show at the exhibition, and each year without fail, he and his staff manage to turn out some sort of awe-inspiring construction. Last year, for example, they came up with a 31 ft. high exact copy of the Eiffel Tower that turned out to be one of the main centrepieces of the show. This year they went further and produced a working replica of the world-famous Big Wheel in Vienna, which was not only a centrepiece of the exhibition, but was also a landmark in Nuremberg itself. One important visitor to the town, in fact, jumped into a taxi and asked to be taken, not to the show, but to 'the Big Wheel'!

The Meccano Big Wheel is not as tall as the earlier Eiffel Tower, but it's much bulkier. Gaily lit by 150 coloured lamps, it stands 16 ft. high from bottom to top, the actual revolving wheel having a diameter of 13 ft. 7 in. and carrying 15 'cars'. As many as 25,000 Nuts and Bolts, alone, were used in its construction which took six weeks from start to finish. Vienna's original Big Wheel, made famous by the film 'The Third Man', was built in eight months, work finishing on June 21, 1897, but it did not actually start turning until 12 days later. In 1945 it was burned down which was a great blow to the Viennese people, as it had, by that time, become almost part of their lives. Undaunted, they set to work re-building and, within one year after the war, it was again in use. To begin with, only four cars were operational, but another 11 were subsequently added, bringing the total up to 15—exactly half the number fitted to the original. These 15 cars have given unfailing service ever since.

PLANNING a model car racing circuit is always an exciting and interesting project —it can also often be difficult, but with the introduction of the Scalextric booklet, featuring plan drawings of 101 circuits, the problem of choosing a suitable layout to fit an available space is completely solved.

For the newcomer to the thrilling competitive hobby of electric model car racing this booklet is particularly invaluable. It presents clearly, in easily understandable form, a range and variety of plans to suit all tastes, and accompanying each layout design is a list of the Scalextric track sections required. Furthermore, the booklet's usefulness is enhanced considerably by the inclusion of adaptations of 15 full-size circuit designs, thus providing the model racing enthusiast with an opportunity of constructing a layout in miniature that conforms to an actual world-famous road racing circuit.

Straight or twisty

Apart from major British circuits such as Silverstone, Oulton Park, and Brands Hatch, plans of the famed Sebring circuit in the United States, plus a number of renowned European road courses are included. All are capable of reproduction in miniature, complete with their individual characteristics, because of the ingenious adaptability of the Scalextric track sections and components. There is practically no limit to the size and shape of layouts that may be constructed—the dominating factor being the space available.

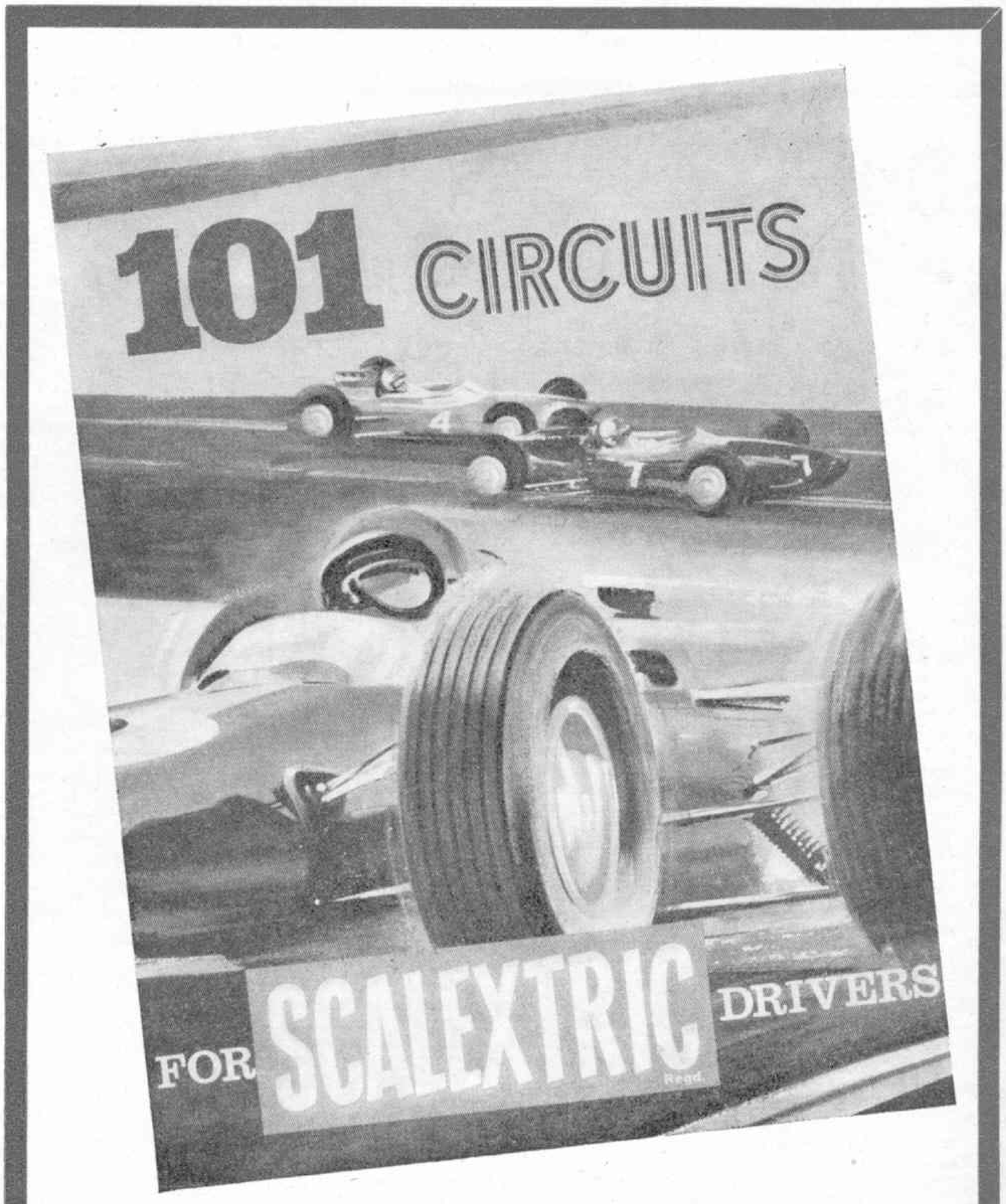
Functional, miniature reproductions of the world's fastest road courses — Rheims in France, or Spa Francorchamps in Belgium are now within the scope of the Scalextric enthusiast. Alternatively, the slower, absorbingly tortuous Monaco 'Round the Houses' layout can provide a circuit that could well necessitate particular skill, and split-second action on the part of competitors with their hand controllers when racing miniature cars around it.

The full-size course on which the famous, annual 100-lap Monaco Grand Prix is held, has often provided the background for some of the most exciting incidents and struggles for supremacy in motor racing history. In the 1955 event, Alberto Ascari, driving a blood-red Lancia was leading the race when he momentarily lost control at the tricky chicane bend — with lightning reactions he endeavoured to correct the car's vicious swerve, but all to no avail, and the snarling machine shot through a low wall of straw bales to plunge sickeningly into the glittering, sun-drenched water of Monaco harbour amidst clouds of spray and steam. Frogmen, who are always stationed at this spot in readiness for such an occurrence during the race, immediately leaped in and fished out the Italian who, miraculously, had escaped without serious injury.

Many of the world-famous road courses are somewhat sprawling in design and consequently are likely to occupy a considerable amount of space when constructed in miniature. Space usually being at a premium in the layout of a model circuit, much of the area could therefore be regarded as wasted. There are, however, two famous circuit layout designs which are extremely compact; both making full use of the areas they occupy—They are the Sebring and Monza layouts, and both can be recommended to anyone in search of a compact layout based on that of a well-known full-sized circuit.

The Scalextric plan for the Sebring circuit is designed as a 4-lane layout, and for Monza, as a 2-lane—space required accordingly being: 13 ft. 2 in. by 11 ft. 10 in., and 10 ft. 6 in. by 4 ft. 8 in. respectively. If necessary, the Sebring design could easily be changed to a simple 2-lane circuit, thus reducing it in size, and the Monza design could also be reduced in size by removing an equal number of straight track sections from the parallel straights—although it should be pointed out that this procedure in connection with the latter layout would alter its character considerably from that of its full-size counterpart.

Situated in the heart of Florida, U.S.A., the full-size Sebring circuit was laid out on an abandoned wartime airfield. In 1950, a six-hour race was held and it was won by a British Allard powered with an American Cadillac. Two years later the Florida 12-Hours event



TAKE YOUR TRACK PICK FROM SCALEXTRIC 101 CIRCUITS

was first promoted and since then has grown in importance and repute. Now the Sebring 12-Hours Race has become one of the most renowned World Championship Sports Car events on the calendar, attracting most of the leading marques and drivers.

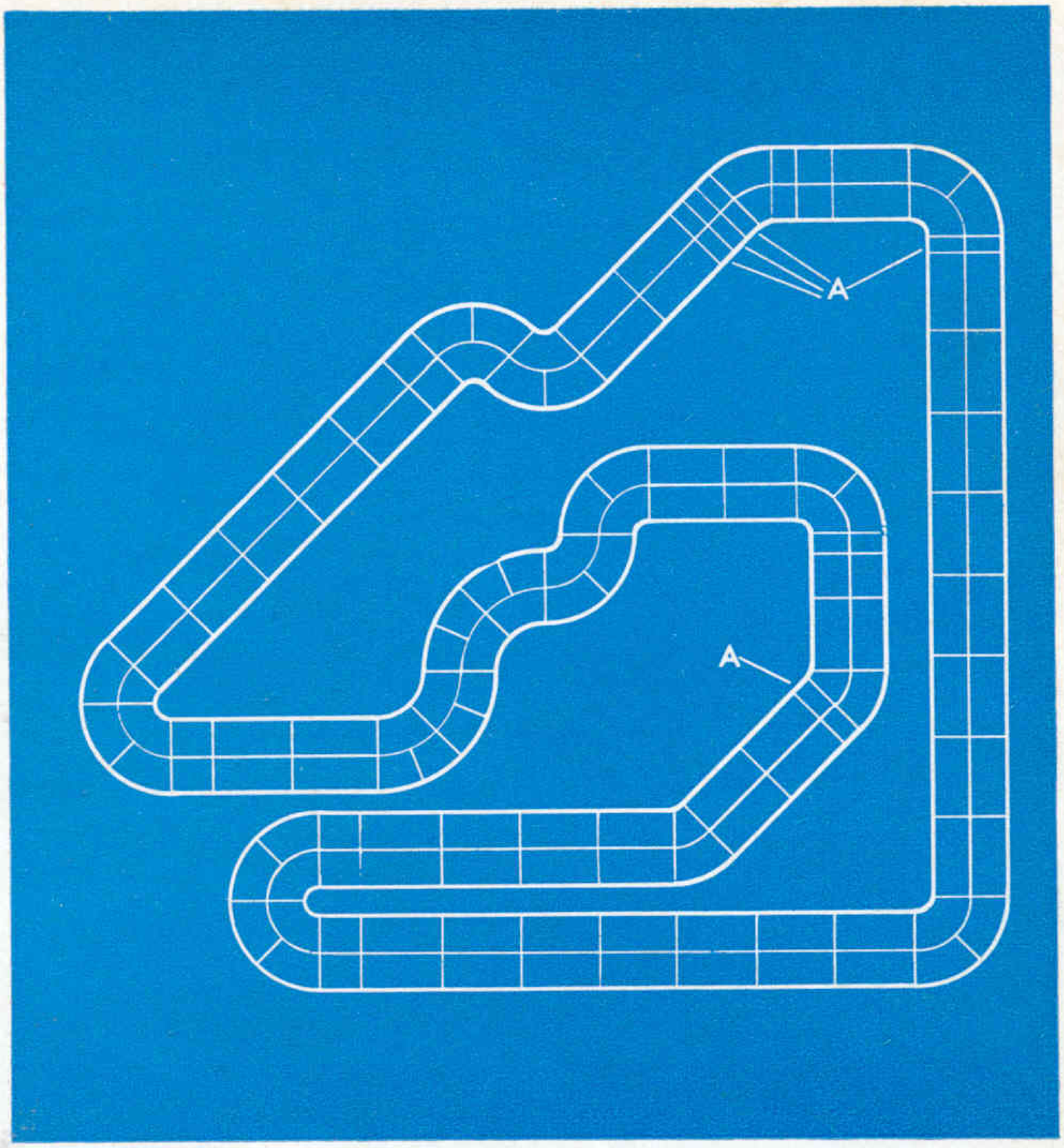
Monza-fast!

In comparison, the fast Monza circuit is of an entirely different character. Built in 1922 in what was formerly a Royal Park at Monza, near Milan in Italy, it has been developed over the years into one of the world's most famous centres for motor sport—the very name 'Monza' has become synonymous with motor racing. On several accasions during its existence, the course has been altered in design, and in 1954/55 a banked circuit was incorporated. It is the venue of the Italian Grand Prix and was one of Stirling Moss's favourite tracks. With its sharp bends and fast straights it invariably produces good, close racing, and in design and layout it is ideally suited for reproduction as a miniature model car racing circuit. Monza perhaps, because of the nature of its design, is more suited for this purpose than any other famous racing circuit, and can be considered as being the most adaptable. Its layout has, in fact, been described as resembling that of a super-model railway!

In his Foreword to 'Scalextric 101 Circuits', World Champion driver, Jim Clark mentions being enthralled with the realism and excitement in racing the Scalextric miniatures—now, with the introduction of this booklet, many track-building problems have been simplified and for the Scalextric enthusiast in particular, this thrilling pastime must inevitably become even more enthralling in its realism.

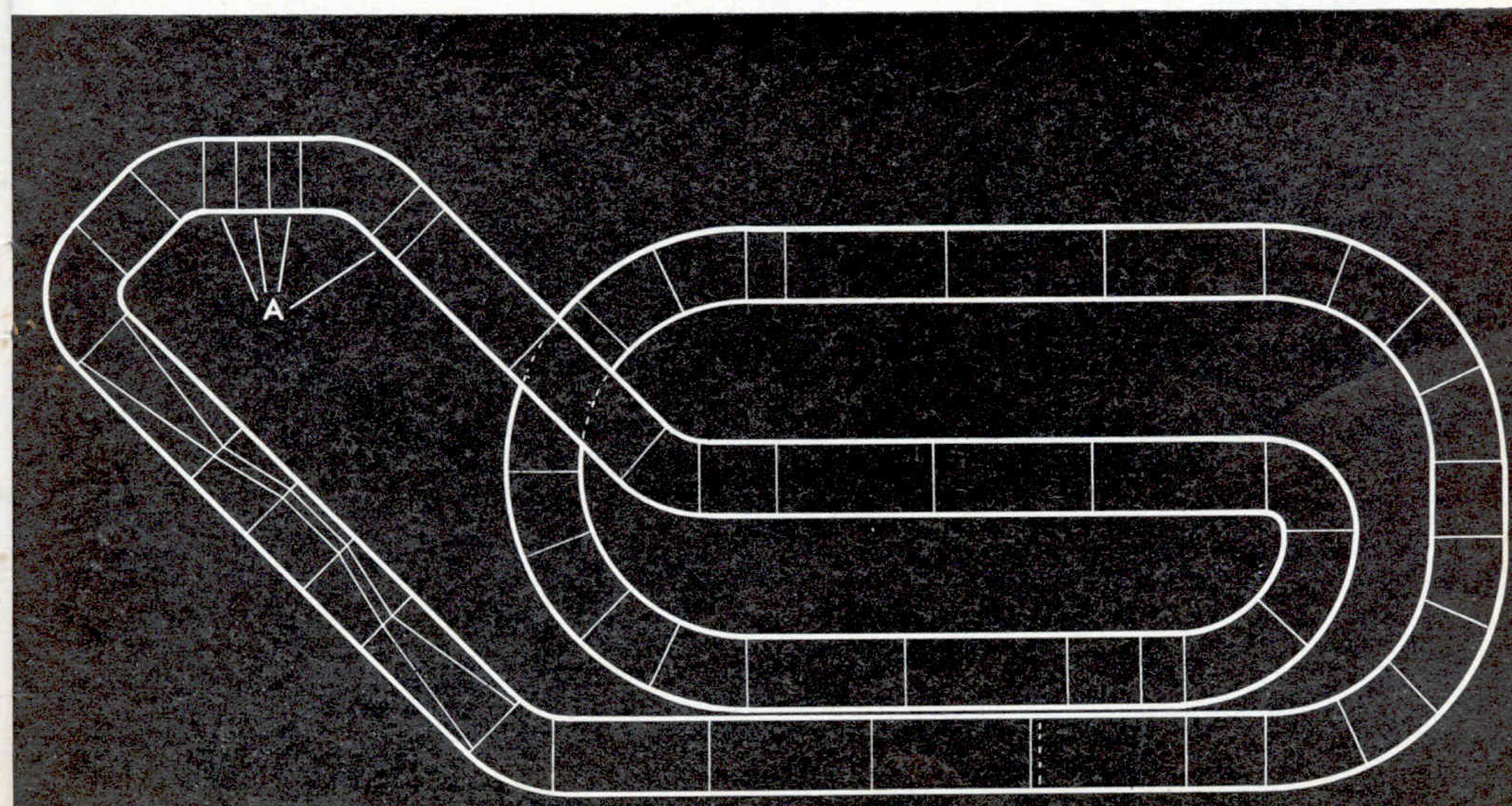
Next month I will deal in greater detail with modifications that can be made to a 'standard' layout design, as a guide for the prospective circuit builder.

Walkden Fisher



Sebring (U.S.A.) SCX.247, 4 lane, 13 ft. 2 in. by 11 ft. 10 in., 4·01 m. by 3·61 m. approx., 28 Standard Curve PT/51, 4 Inner Curve PT/52, 8 Outer Curve PT/53, 10 Double Inner Curve PT/56

Monza SCX.1368, 10 ft. 6 in. by 4 ft. 8 in., 3·20 m. by 1·42 m. approx., 2 lane, 3 Standard Curve PT/51, 3 Inner Curve PT/52, 16 Outer Curve PT/53, 2 Double Inner Curve PT/56, 4 Straight 'A' PT/57, 2 Straight 'B' PT/58, 5 Straight 'C' PT/59, 13 Straight 'D' PT/60, 1 Starting Line PT/63, 1 Goodwood Chicane PT/77



Small corrugations in aluminium cowling

Elephant badge — black & white.

K-1291

Dark polished wood propeller

Exhaust collector ring golden brown.

K-1291

Red band.

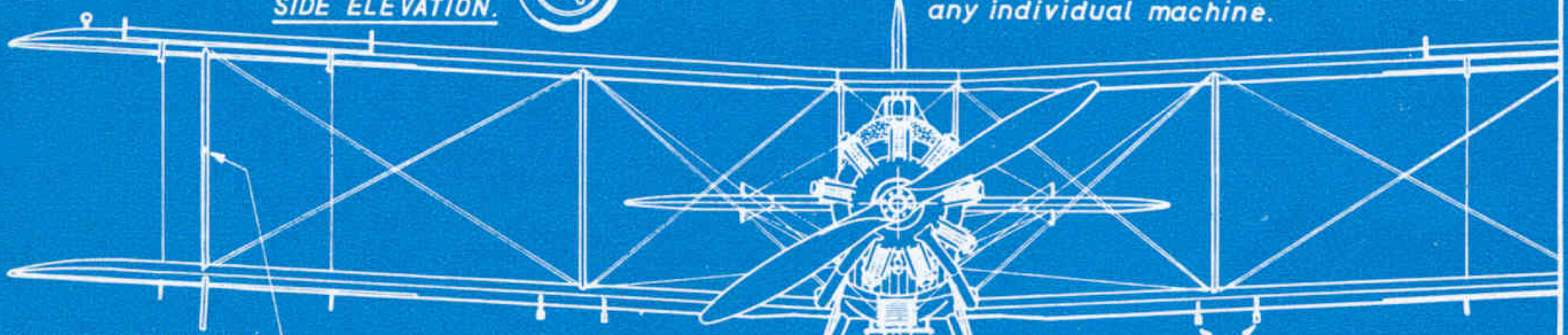
Black "F"

Footstep this side only.

Rack for 4-20lb. bombs.

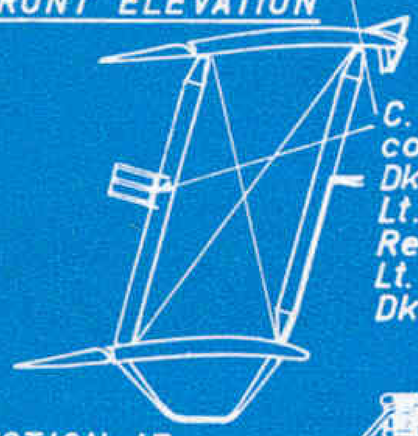
NOTE Wapiti aircraft varied considerably in detail, check with photographs before modelling any individual machine.

SIDE ELEVATION.



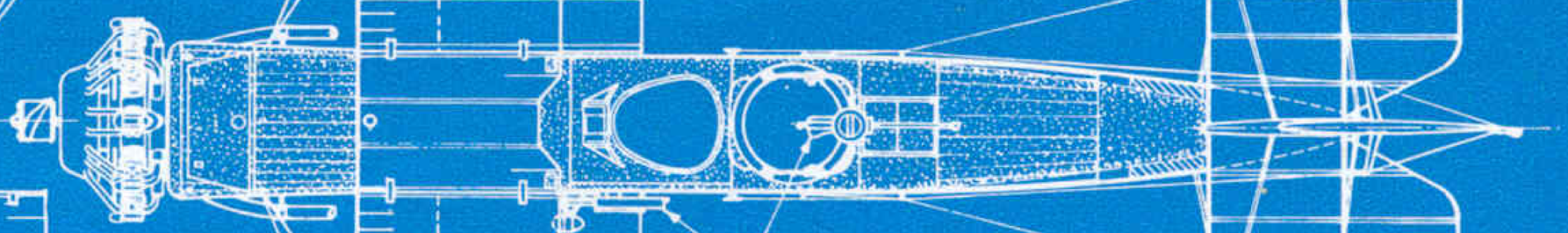
Bomb racks.

FRONT ELEVATION



C.O's. pennant. colours :-
Dk. blue.
Lt. blue.
Red.
Lt. blue.
Dk. blue.

SECTION AT OUTER STRUTS

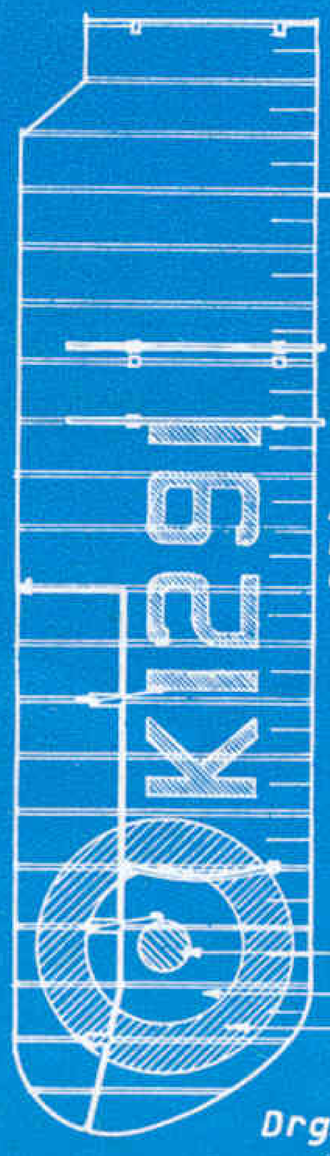


PLAN

Lewis gun.

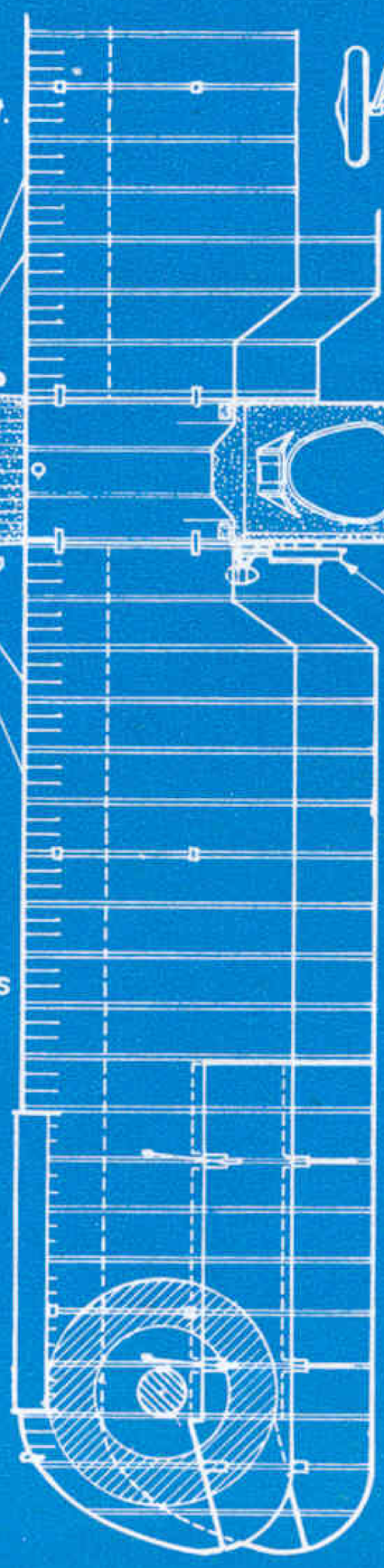
Vickers gun.

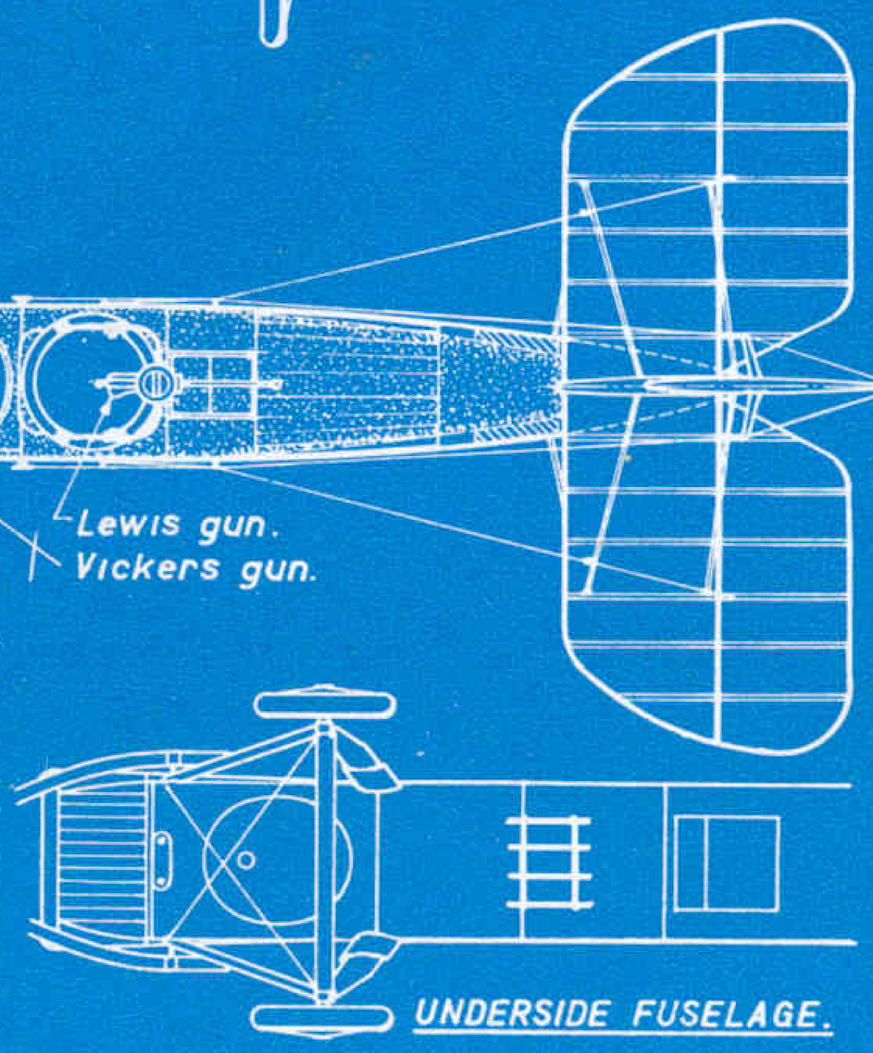
UNDERSIDE LOWER WING



Aircraft numbers read in from tip on both wings.

Red.
White.
Blue.





UNDERSIDE FUSELAGE.

Drg. by I. R. Stair.

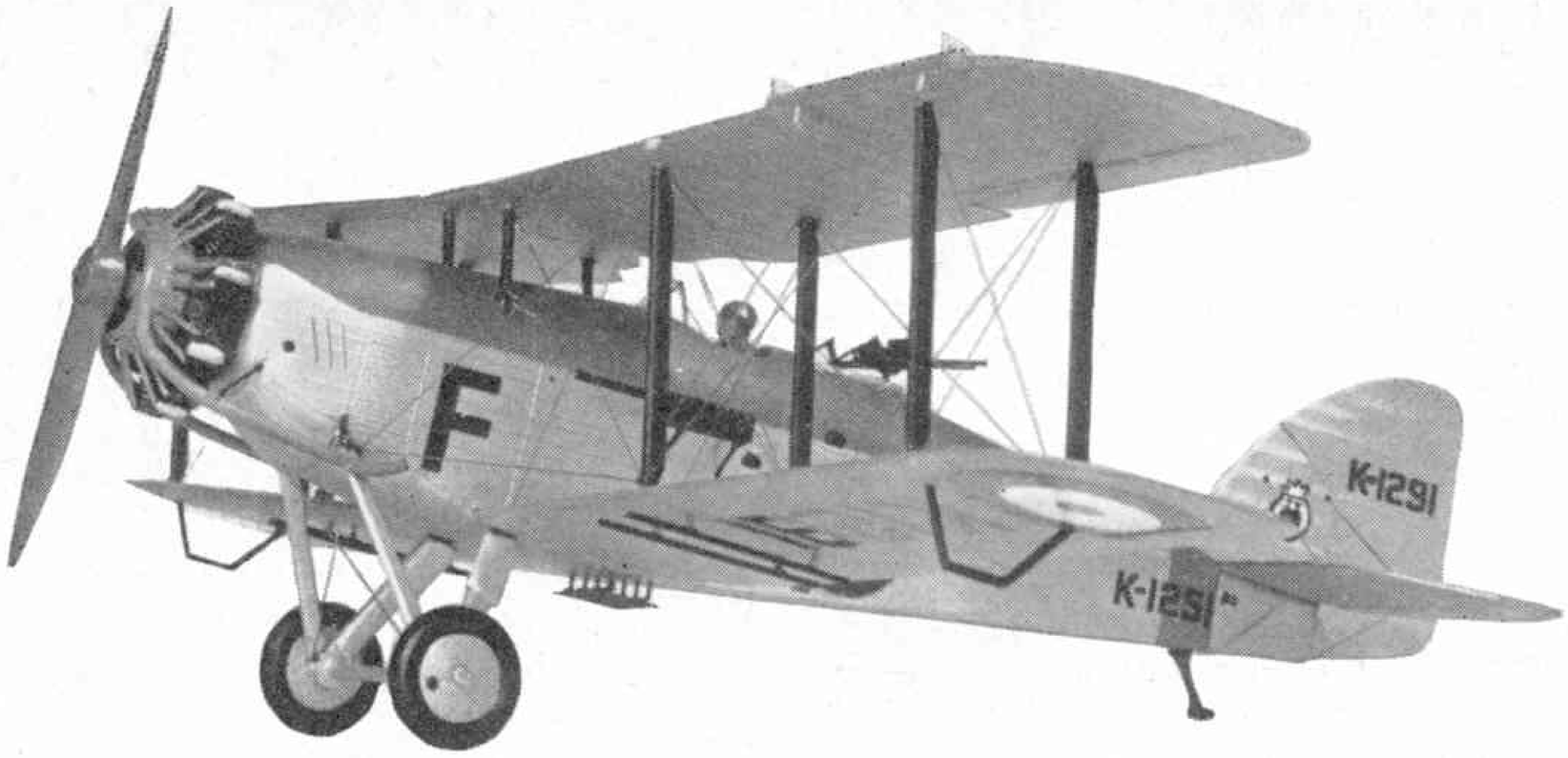
WESTLAND WAPITI Mk IIA.

BRISTOL JUPITER ENGINE.

K.1291. _ Commanding Officers aircraft No. 27 (Bomber) Squadron, Kohat, India, 1936.

COLOURS :-
Wings, rear fuselage, tail unit - silver.
Forward fuselage, undercarriage – bright aluminium. Fuselage top - dark grey.
Struts, guns, tyres, engine, exhaust pipes, oil cooler, bomb racks, — black.

SCALE 0 5 ft.

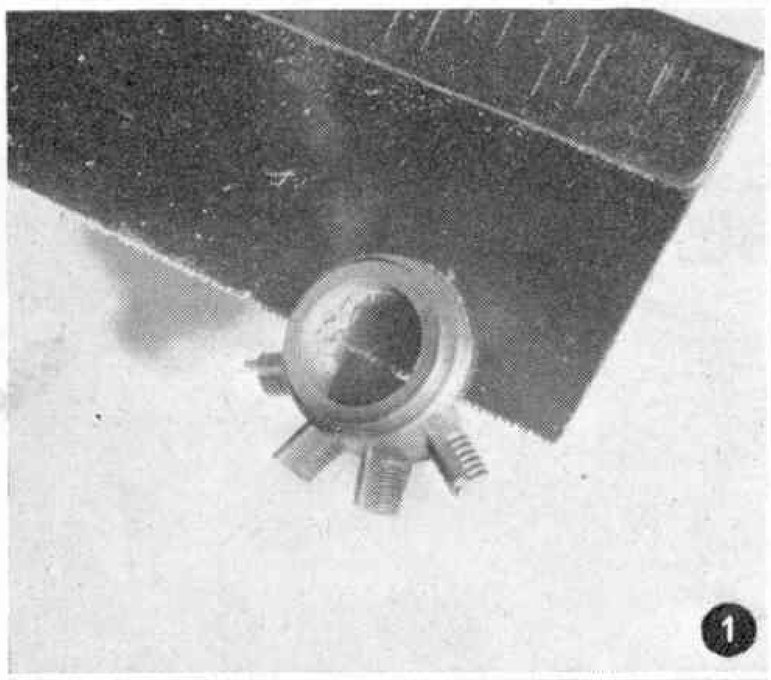


CHALLENGE OF THE 'WAPITI'

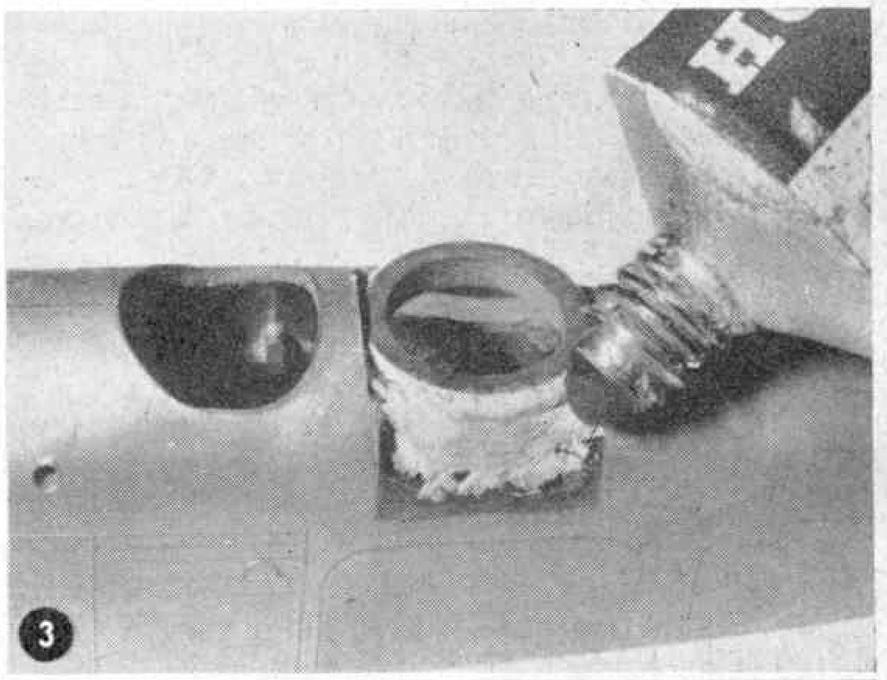
The Westland Wallace is remembered for its record breaking flight over Everest, and the thrilling story of this adventure is told on page 14. The Frog 'Trailblazer' 1/72nd scale kit of the Wallace forms the basis of our plastic conversion this month, in which Doug McHard shows you how he produced from it a Wapiti—one of the most colourful and widely used R.A.F. aircraft of the '30s.

For our conversion, the wings and tail remain basically unaltered, and all the *essential* work involves the fuselage and undercarriage. But since the Wapiti engine, unlike that of the Wallace, is not enclosed in a cowling ring, and is a prominent feature of the machine, much of our article deals with the development and embellishment of this item, however, if you want to simplify the job, you can simply use the original Wallace engine moulding without the cowling ring.

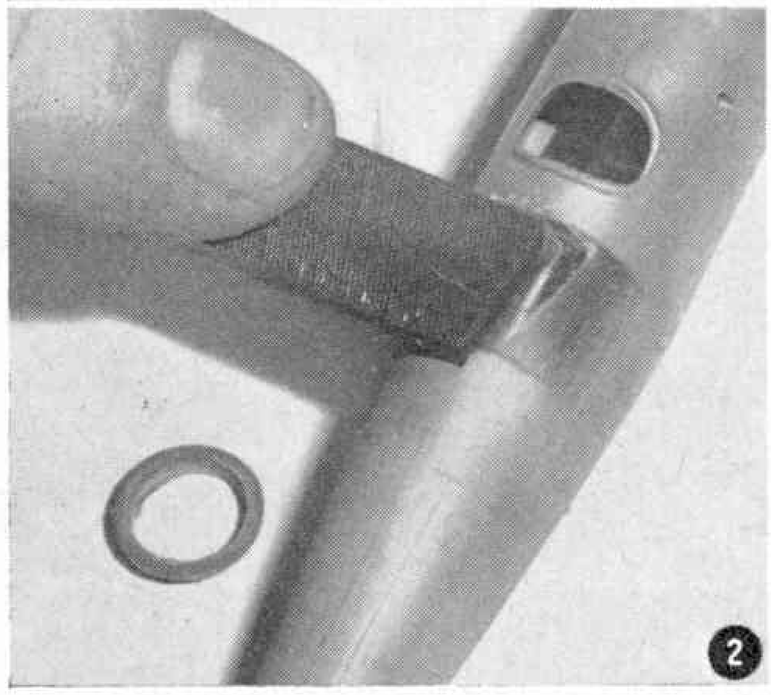
Ian Stair's fine drawing on the facing page reveals a lot more Wapiti detail which expert modellers might wish to incorporate in their own conversions. A close study of these photographs of the Editor's model will provide the inspiration—now read on!



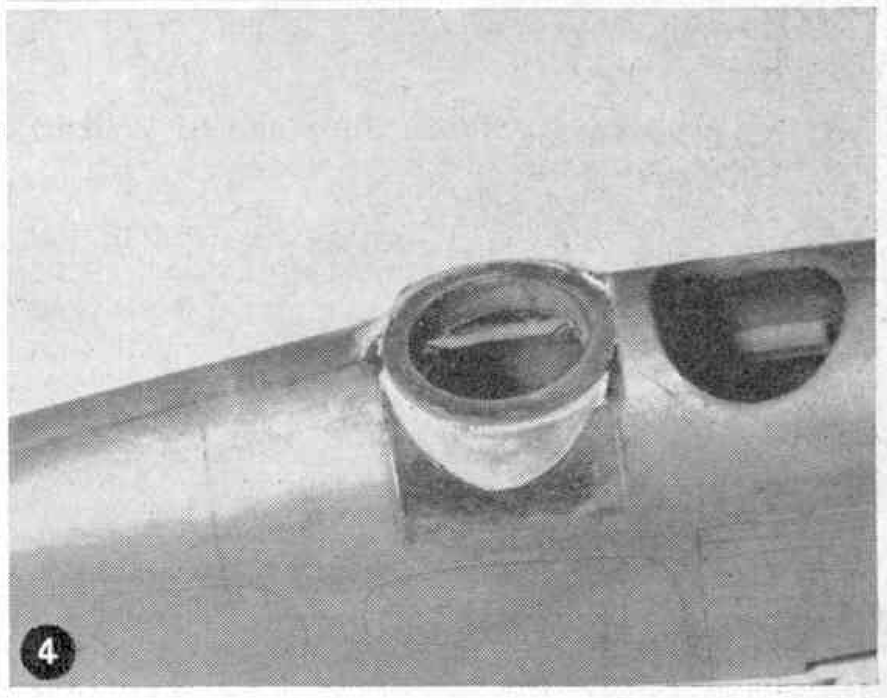
1 First job is to saw the rear rim off the engine moulding. This piece later becomes the rear cockpit gun-mounting ring, so don't throw it away!



3 With a sharp knife, cut a hole to take the small diameter rim of the cut-off rear engine ring, allowing the lower face of the larger diameter part ro rest on the flat-filed rear transparency. Now apply Humbrol Body Putty as shown—more than required to allow for shrinkage—and let it dry overnight.

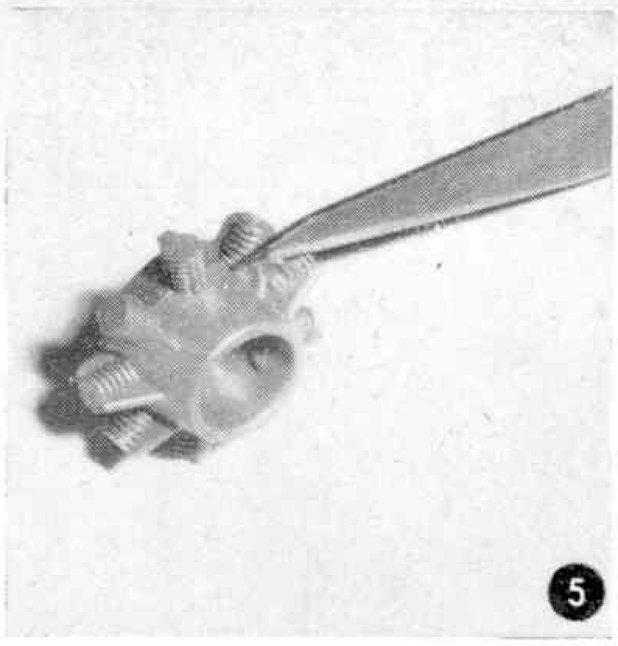


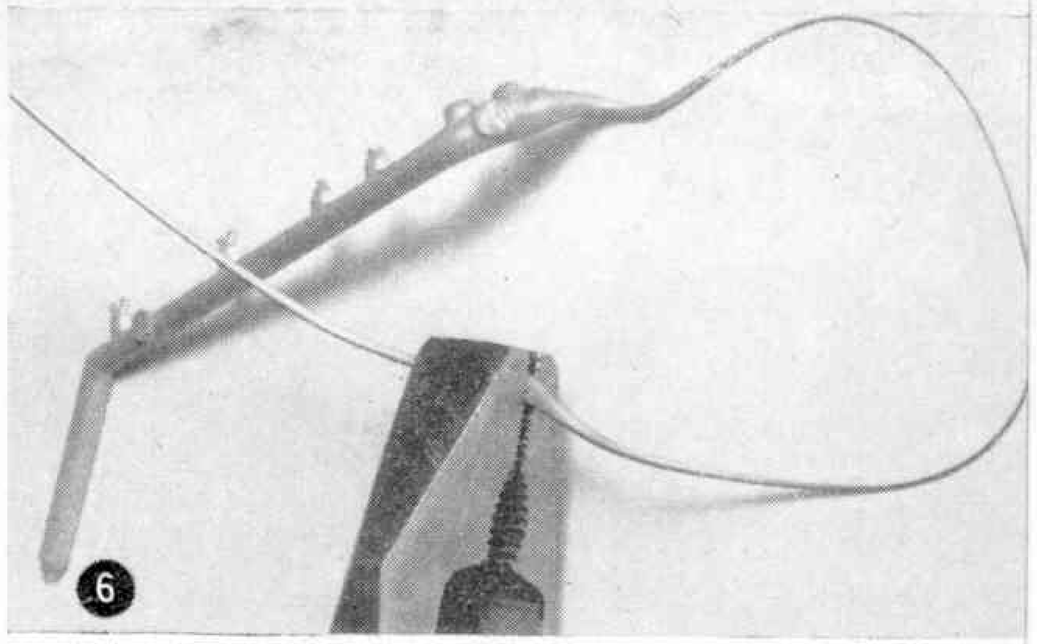
2 The fuselage halves and the rear transparency are allowed to dry *thoroughly* and the top of the transparency is then filed flat (see drawing).



4 Using No. 280 and 400 wet or dry paper, shape the putty as shown, leaving a narrow lip round the top edge, 'open out' the cockpit and gun mount ring with a round file or 280 paper wrapped round a pencil.

CHALLENGE OF THE WAPITI





5 With a sharp knife, cut off the small 'buttresses' on the front of each cylinder.

6 You will need several pieces of thin plastic 'rod' and these are made by heating a piece of spare 'stem' in front of an electric fire and when it becomes very soft, it is gently 'drawn out' using a pair of pliers. Hold it straight until the plastic cools. With a little practise rods of any diameter can be produced by varying the heat and speed of draw.

7 File the grooves back into the front of each cylinder and then drill two 1/32nd diameter holes ahead of each one, angling them back as shown.

8 Insert a piece of drawn plastic rod in each hole and fix in place with a touch of liquid plastic solvent such as Slater's Mek-Pak. Snip off the surplus rod with a pair of nail scissors.

9 Small pieces of slightly larger diameter rod are cemented to the end of each cylinder to represent rocker boxes.

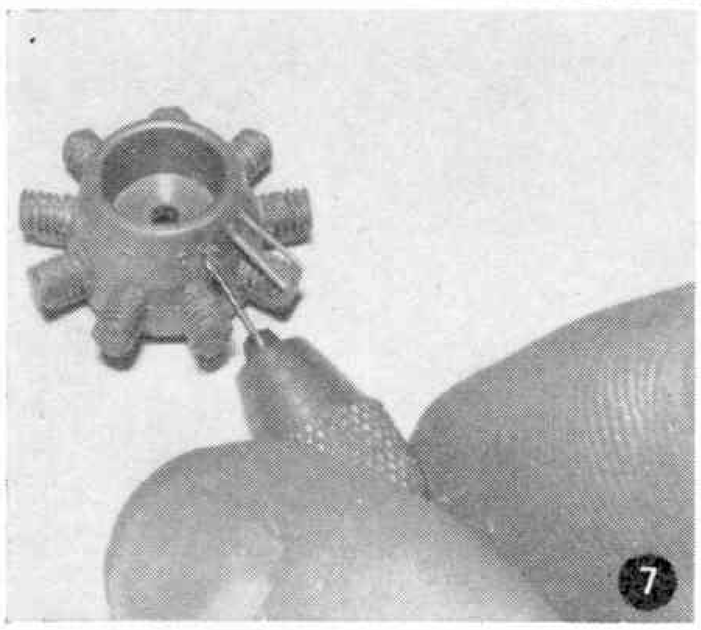
10 Here's the completed engine fixed to the modified fuselage. In addition to the operations described above, the Wapiti fuselage is shortened by trimming $\frac{1}{8}$th in. from the rear end. The rear of the top fuselage decking is then filed down to meet the more forward-set tailplane position. The un-modified Wallace fuselage and cowling ring is shown in the background.

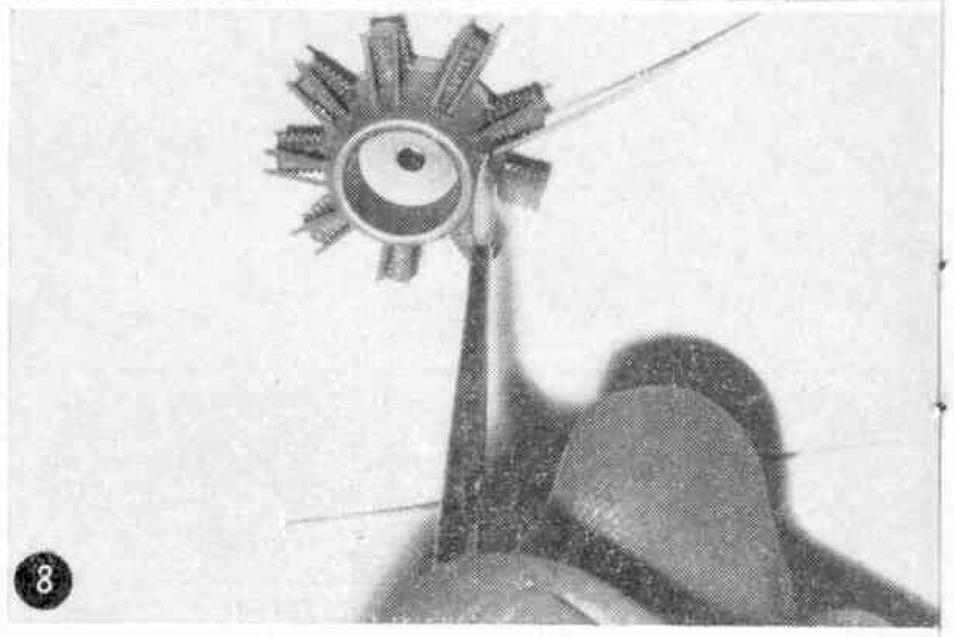
11 This photo shows the standard Wallace undercarriage and engine assembly.

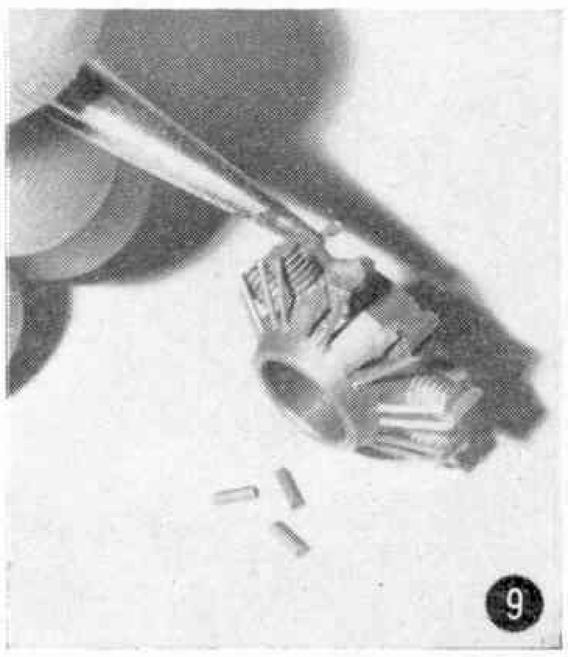
12 Three stages in the development of the Wapiti main undercarriage leg from the Wallace one on the left. The thickened upper leg is built up by wrapping the pared-down leg with thin paper.

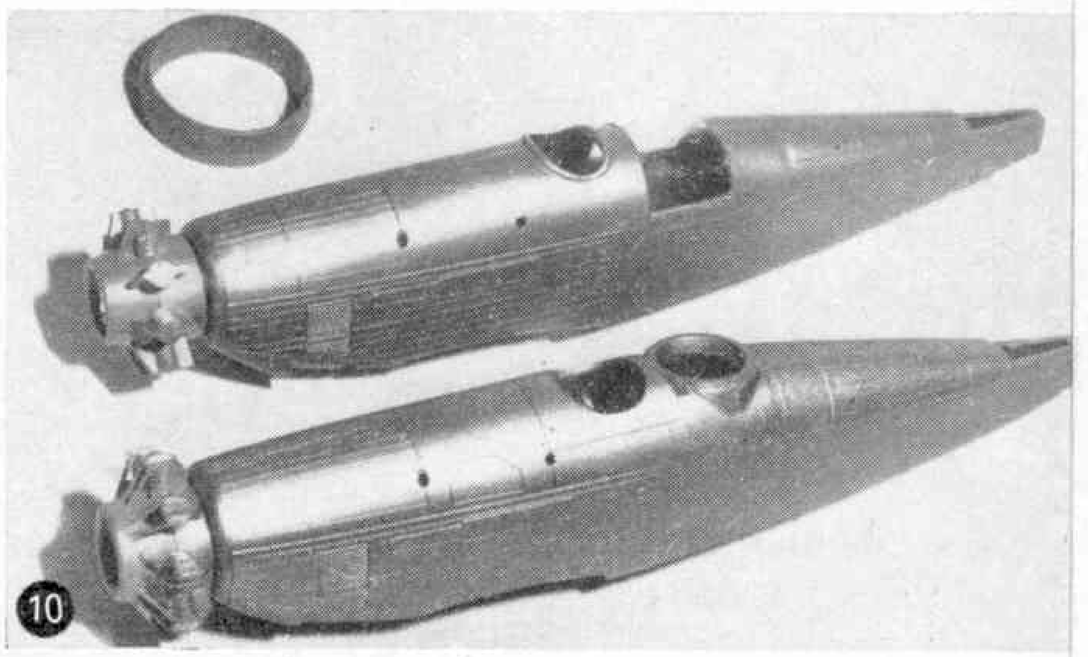
13 On the new undercarriage, the rear struts become the front ones, and two $\frac{1}{32}$nd in. holes should be drilled in the fuselage to take them. $\frac{1}{16}$th in. holes drilled in the wing roots take the main rear strut ends and a new axle is made from one of the thicker plastic drawn rods. The new exhaust pipes are also made from this material.

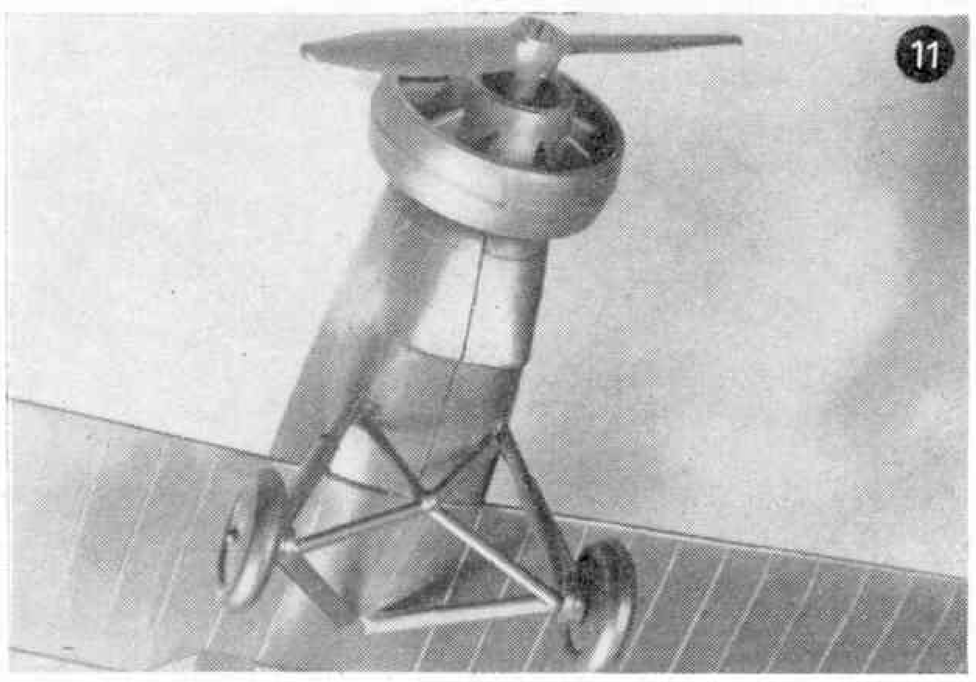
14 The detail makes the difference! It's mostly made from stretched plastic rod and the rigging is Kleintex 'Invisible Thread'. This is a synthetic monofilament, and its slight elasticity keeps it nice and tight. The ends are simply tied to the struts. For certain jobs where wire is to be represented, the 'thread' can be successfully painted silver and, of course, unlike ordinary thread, it cannot go 'furry'. Buy it in any good milliner's. The numeral transfers are from the Yeoman range.

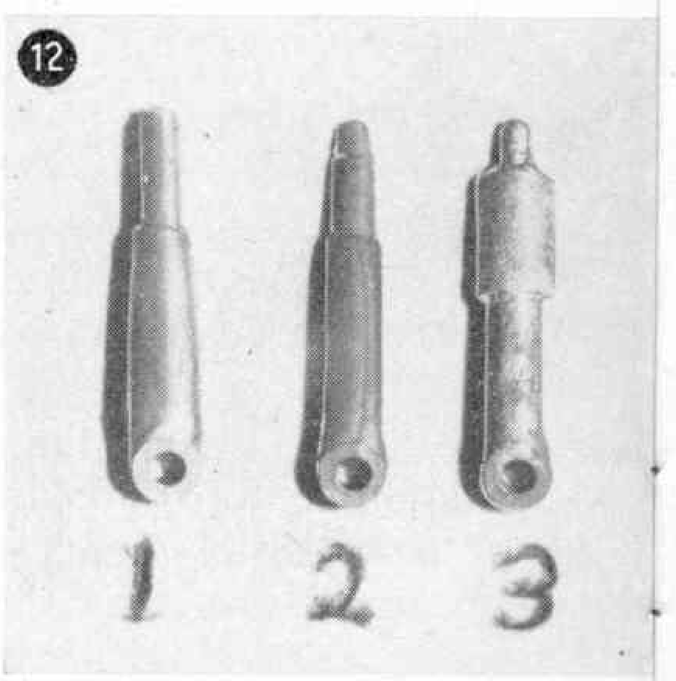


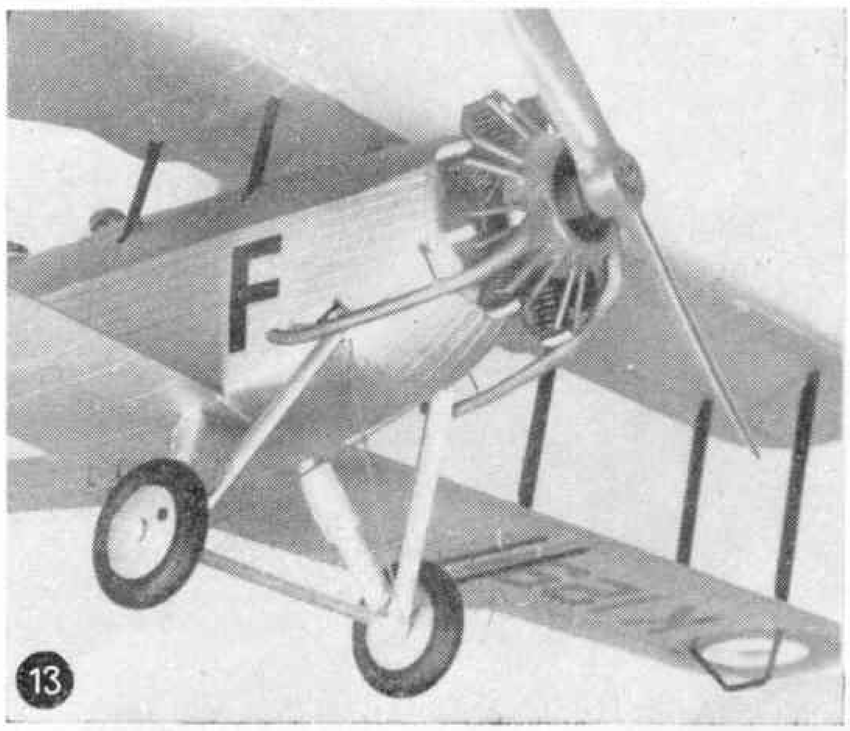








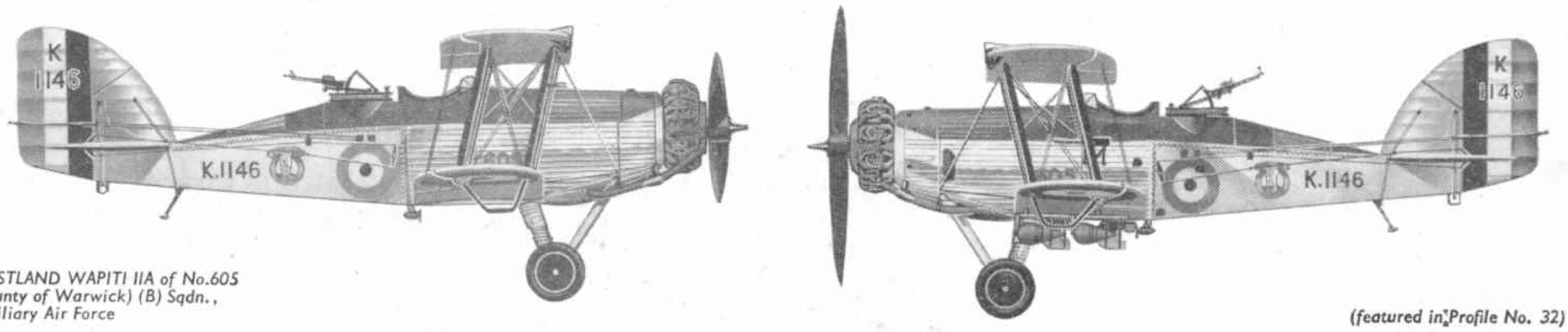




What IS a Wapiti?

A Wapiti is one of the many aircraft described in a series of brilliantly-presented full-colour "Profile" booklets by world-famed authors and illustrated by top-class artists, covering the whole development and service history of aeroplanes and featuring numerous rare and carefully selected photographs.

Send 2/6 for sample Profile and list of titles available, or place your order (at 2/- each) through your local hobby dealer or bookseller.



WESTLAND WAPITI IIA of No.605 (County of Warwick) (B) Sqdn., Auxiliary Air Force

(featured in Profile No. 32)

FOR FLYING COLOURS DOWN THE YEARS . . .

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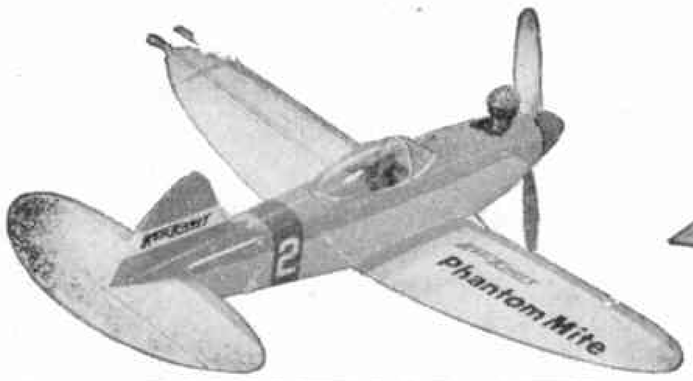
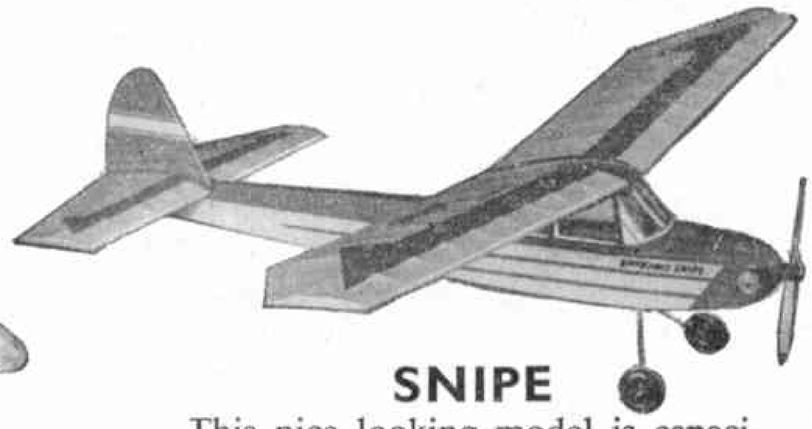


PHANTOM MITE

Just about the toughest model available to the newcomer to control line flying. Features all sheet construction with wings, tailplane and fuselage sides ready cut to shape. Suitable for .5 to .8 c.c. motors. Wingspan 16 in. **17/9**



SNIPE

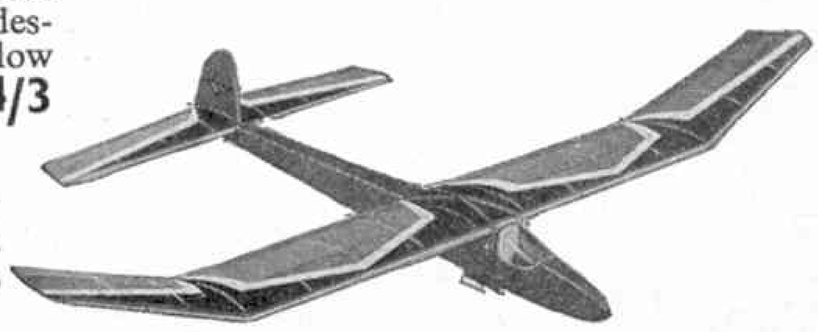
This nice looking model is especially suitable for beginners as it is so straightforward to build and easy to fly. Kit contains die-cut parts and has been specially designed for .5 diesel and .8 glow motors. Wingspan 40 in. **24/3**

NOMAD

Beginner's model with fuselage parts, tailplane and fins in pre-cut, decorated sheet balsa. 20 in. span. **5/11**

CONQUEST

Towline glider for beginners, with a very good performance. Kit contains die-cut parts. Wingspan 30 in. **9/4**



See this famous range at the local model shop

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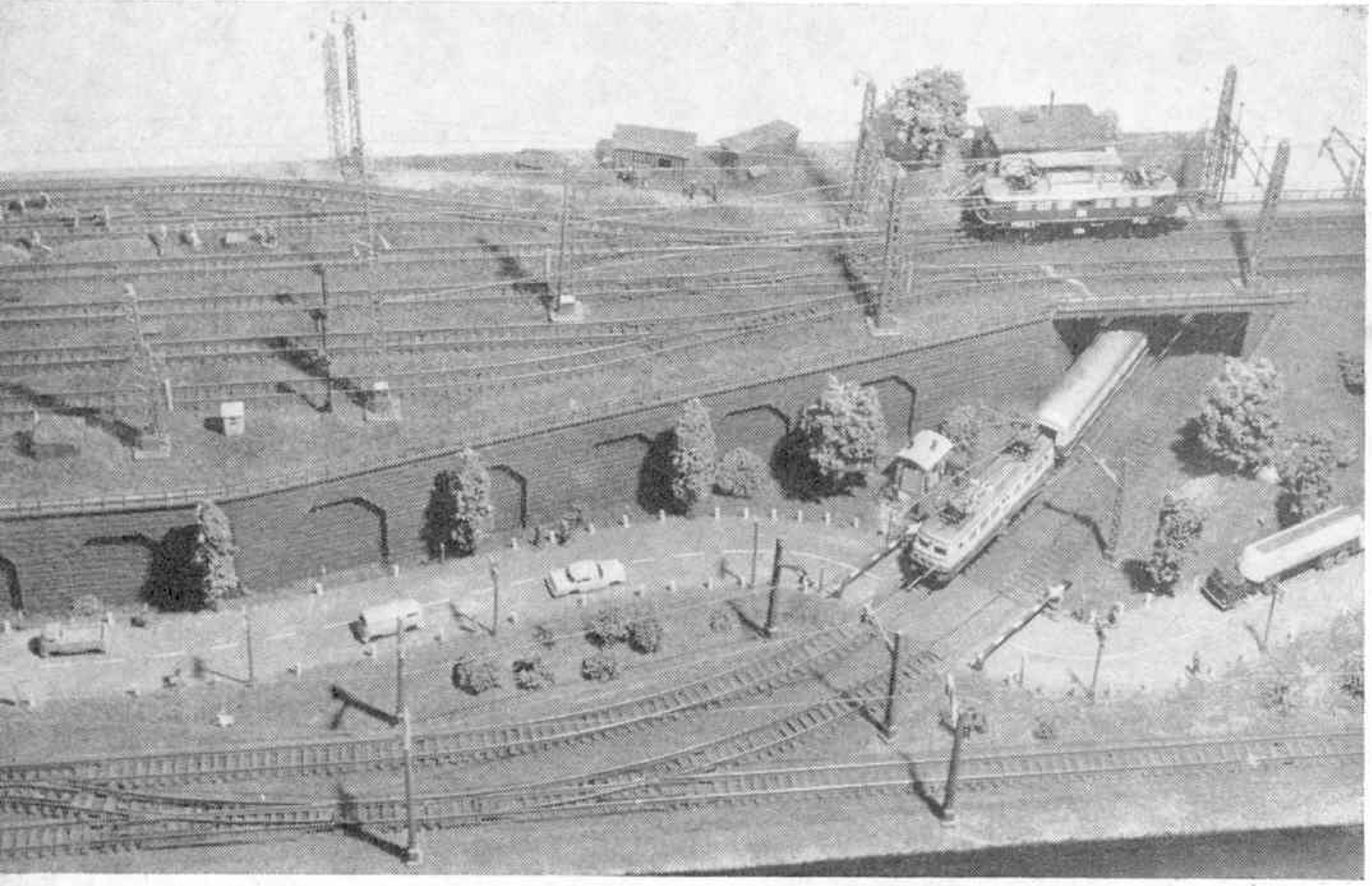
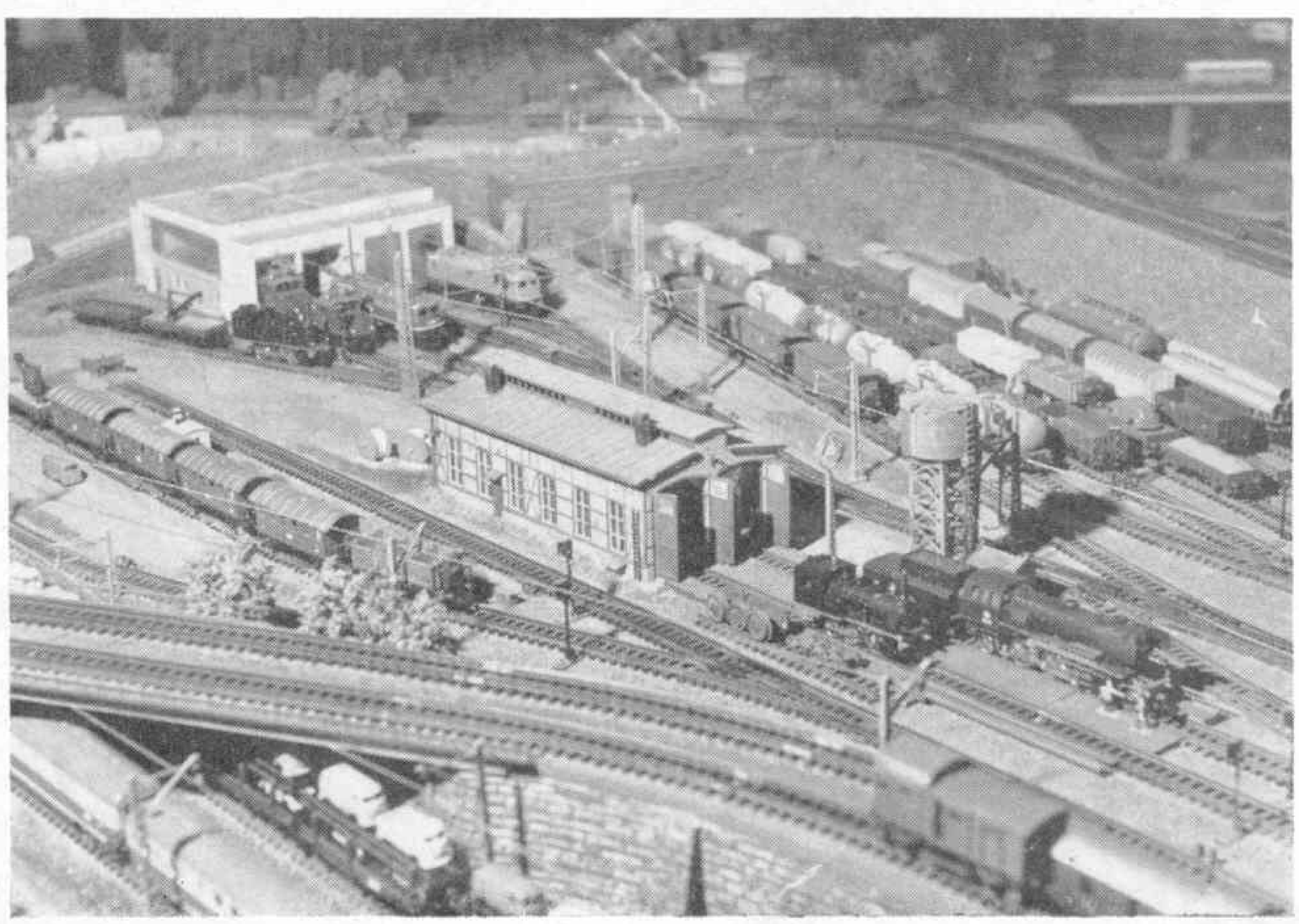
RIGHT from the start!

N FOR NUREMBERG NUREMBERG FOR 'N'

or how we got 'ngaged in Nuremberg

Further information on the products mentioned in this feature can be obtained by adding the name to the 'Reader Enquiry Service' form on page 44.





EVERY February, the world's biggest toy fair takes place in Nuremberg. There, one can see and study the latest trends and developments that will, in the months to come, materialise in the local model and toy shops.

Perhaps the most striking single impression from this year's show was the way in which "N" gauge railway modelling has really *arrived!* No longer is it the ultra-small toy train set looked upon as something of an amusing curiosity—it is now a proven, practical 'system' which offers unparalleled scope for scenic development and at the same time enables the enthusiast with no 'railway room' to work on his layout and put the whole thing away afterwards.

A satisfying and quite complex system can be built up on a board measuring merely 4 ft. by 2 ft. 6 in.—a similar OO scale layout would need 8 ft. by 5 ft.—hardly something one could work on in the tele-room and put under the stairs at night!

Perhaps the most encouraging thing about this development which bodes well for its secure future, is the number of manufacturers who are going "N". All over the vast Nuremberg Fair one could see "N" gauge layouts and accessories. There were plastic building kits, scenery, flexible track and points from our own Peco company (who also showed their British outline locos and rolling stock). Several quite 'new' manufacturers had advance samples of forthcoming trucks, coaches and locomotives. There were even "N" gauge figures—perfect in every detail!

The most impressive single display was certainly the vast Arnold Rapido layout. It must have been all of 25 ft. long and 7 ft. wide—simply packed with track and stock —all standard items too. A whole group of complete trains ran continually and faultlessly each controlled automatically by relays. Some of the goods trains consisted of 50 trucks, while 12 (scale length) coach passenger expresses purred effortlessly round sweeping curves and up realistic gradients.

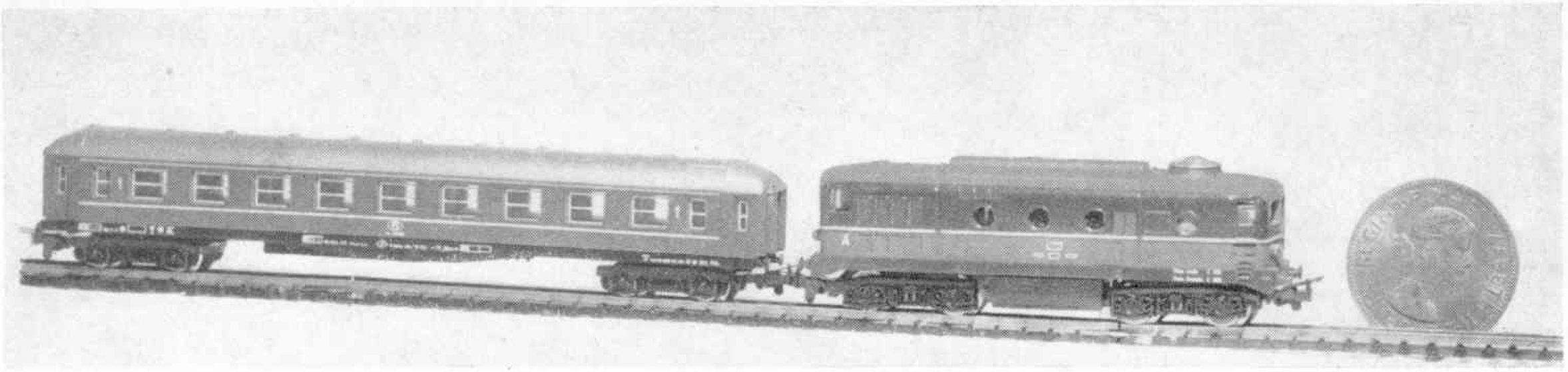
Yes! Nuremberg was all for "N", and having seen its vast possibilities—so are we! Perhaps the pictures on these three pages will convert you. too **J. D. McH.**

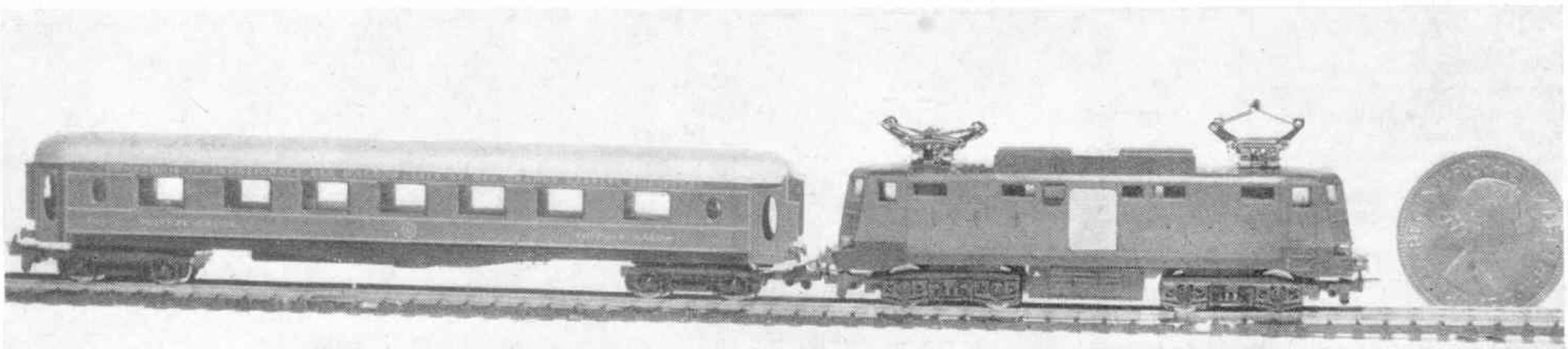
Our cover photograph and the three layout pictures on these two pages all show Arnold Rapido 'N' gauge layouts.

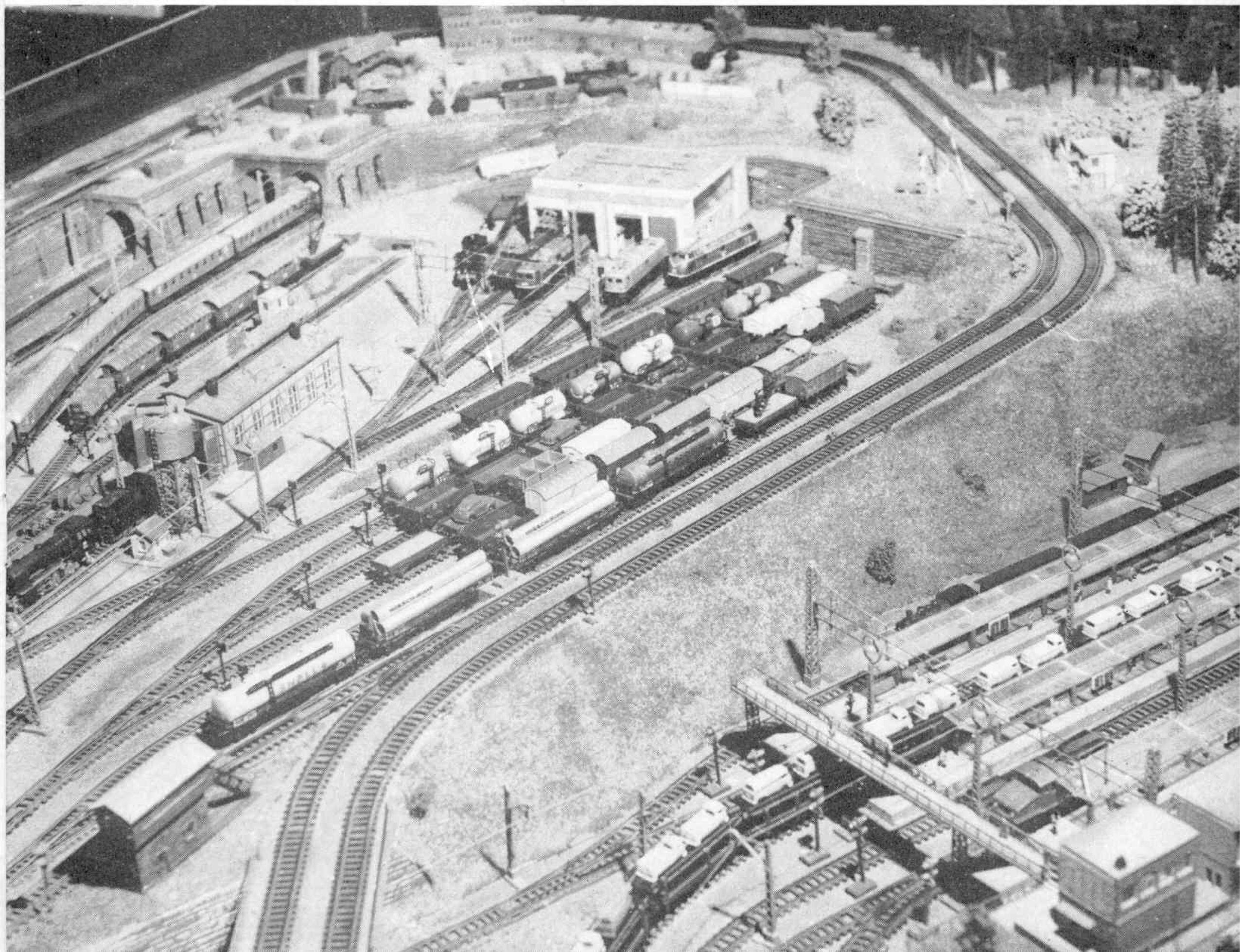
The layout section in the top picture on this page, (like that featured on the cover) occupies a length of only just over two feet! The track ballasting adds enormous realism to this scene, and the overhead catenary should be noted. New large radius track sections create an added 'prototype look' and the road vehicles—also Arnold—are new additions too.

The two lower pictures show the marshalling yards and loco sheds. Notice (right) how the elevated embankment completely hides the station complex in the foreground when viewed from the rear (photo left). Many new items are to be seen in these pictures, among them the Water Tower, Catenary Towers, Double-Deck Car-Transporter Trucks, 4 Wheel Branchline Coaches, and several new locos.

Top two photos on page 26 show some advance prototypes of future 'N' gauge models from the Italian Lima company. A penny alongside each one gives an impressive size comparison. Detail is superb—pantographs work and even the lettering on the coaches is accurate! You will be pleased to know that the prices quoted for the many new Lima 'N' gauge products is very competitive indeed! ▶







N FOR NUREMBERG NUREMBERG FOR 'N'

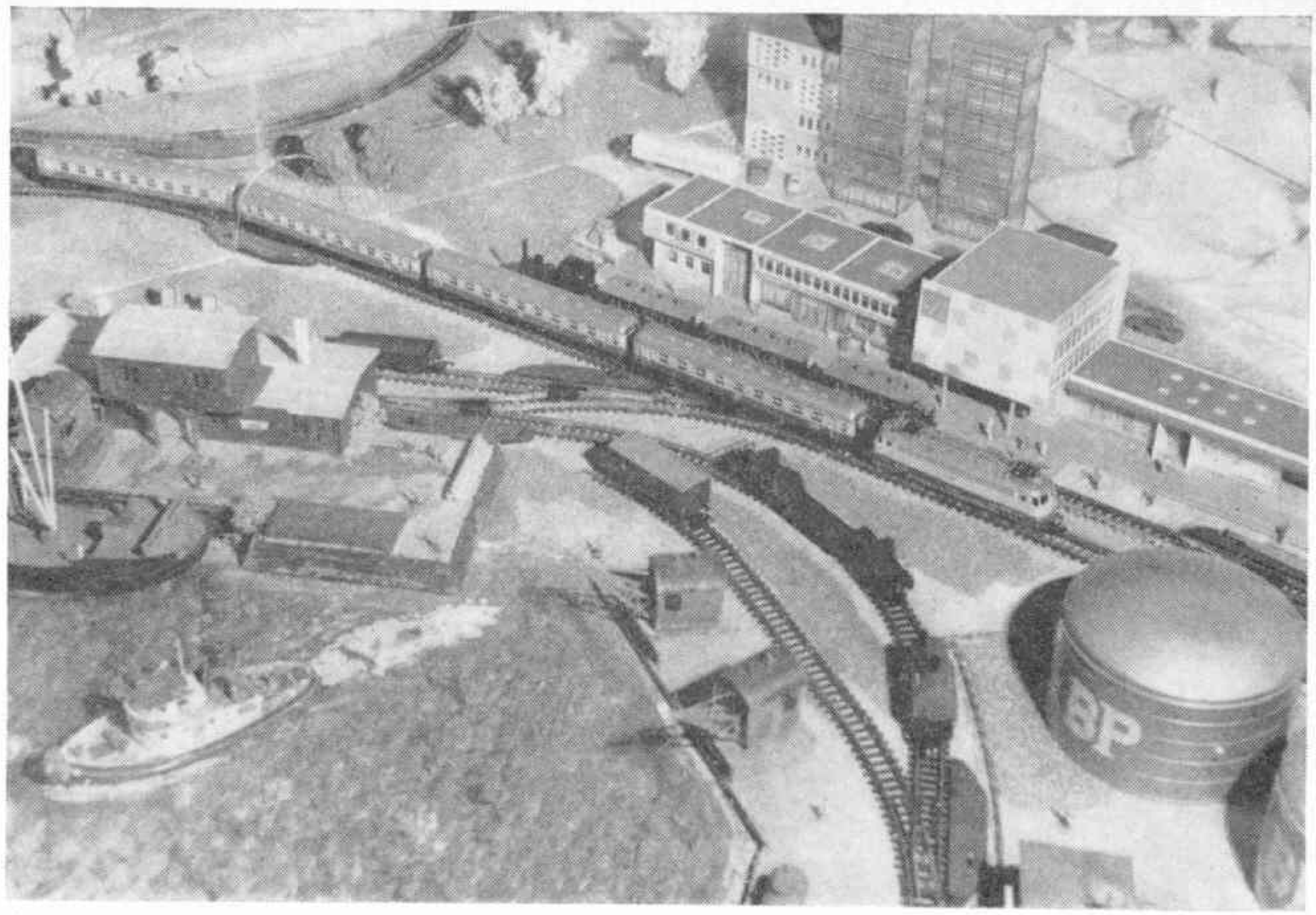
Top photo shows some of the new Minitrix 'N' gauge models including the unit-constructed station buildings.

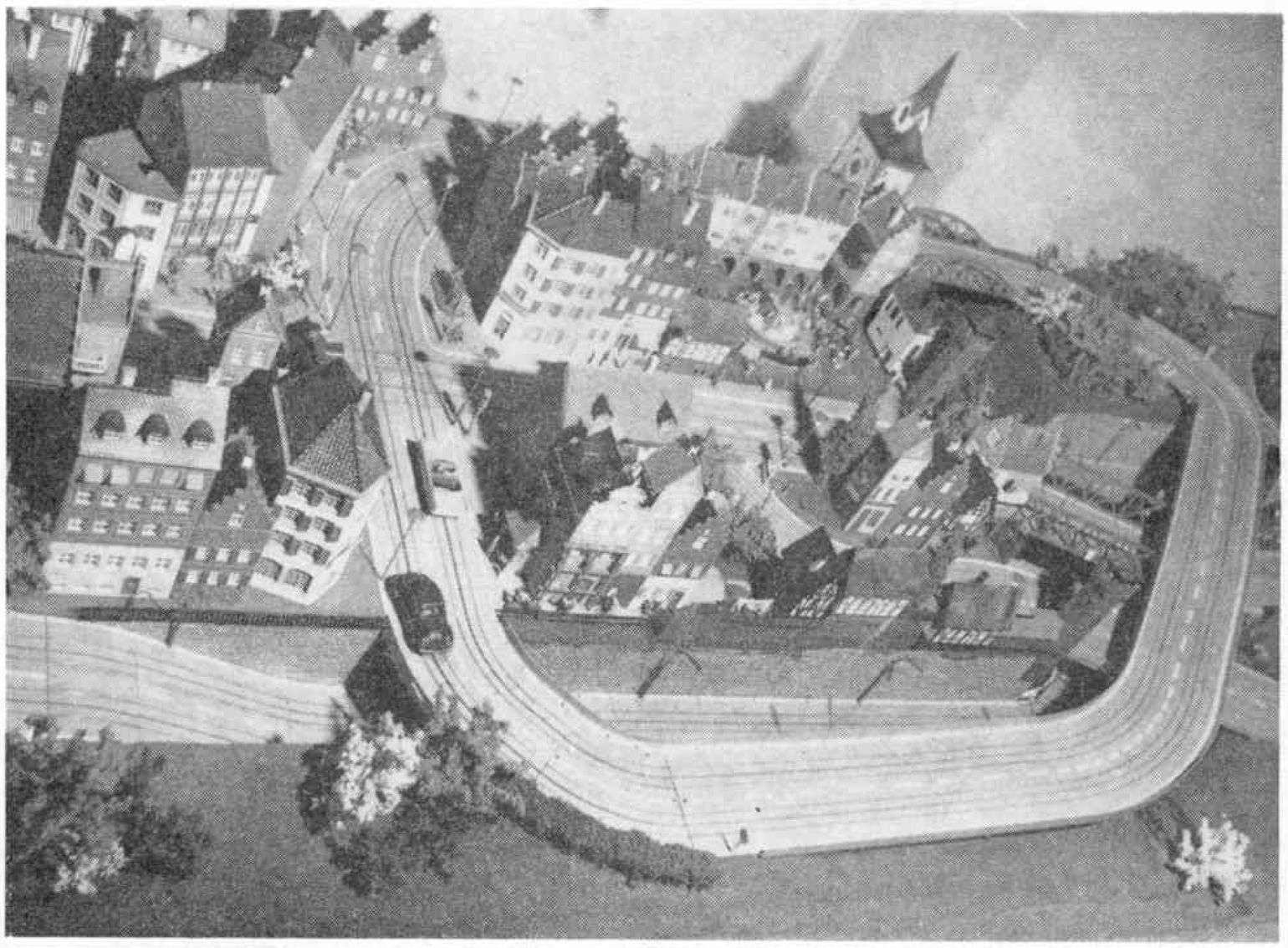
Egger-bahn narrow gauge equipment has had a wonderful reception in this country and a very useful new accessory is their wire-brush-type wheel cleaner (below). Clipped over the track, the wire bristles transmit power to the loco wheels which clean themselves as they turn! The loco's new as well—only one of the many additions to this exciting range.

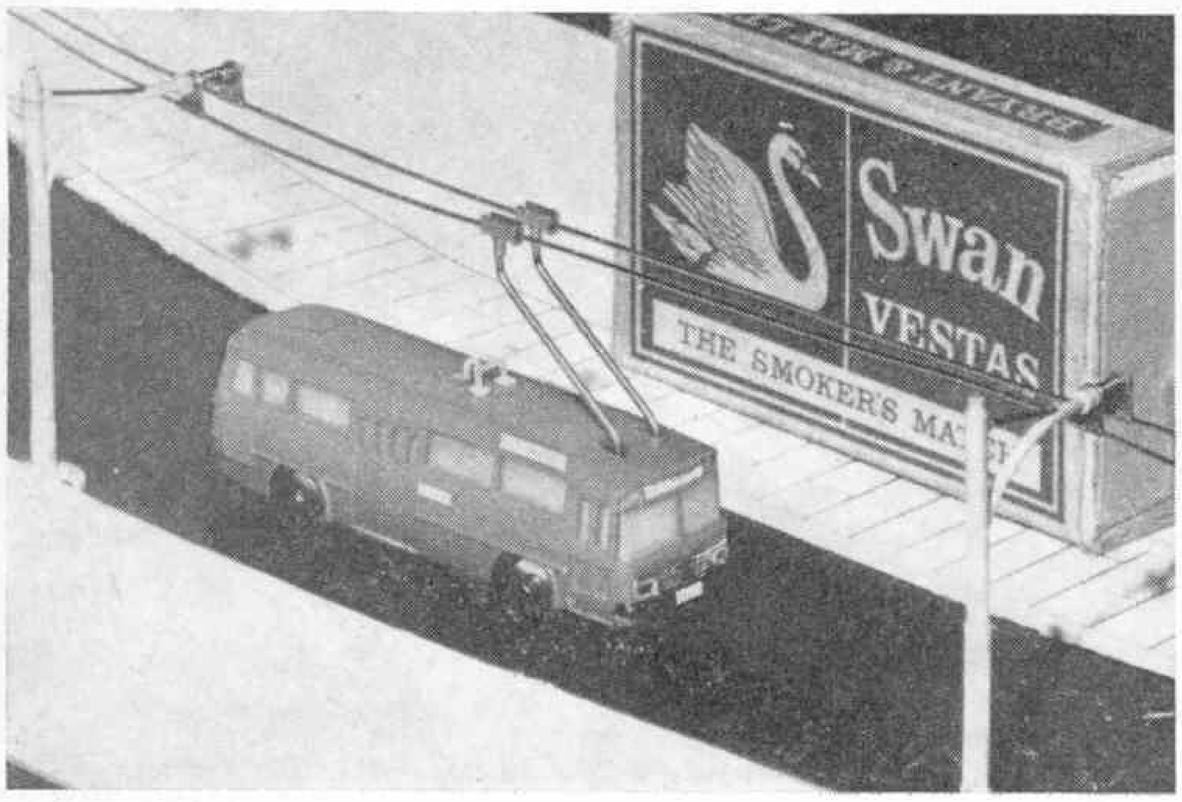
Bottom photo is of an Eheim 'N' gauge trolley bus, the matchbox gives the scale away! Auto-steering and interior lights add the finishing touch and the model is available from Continental Models Ltd.

The roadway on the right is *not* 'N' gauge! It is part of the impressive Faller layout and demonstrates the possibilities of an urban layout—working colour light controlled crossings and all!

Finally a lot of sheep. Have you ever wondered why that lonely plastic sheep in your pasture never looks like anything other than a plastic sheep? Here's the answer—you've got to have a whole flock of them—The Preiser ones in this little scene were so well arranged in a nicely rolling landscape that they stopped us dead in our tracks—we almost fell asleep counting them!







BOOK REVIEWS

BRITAIN'S NEW RAILWAY

By O.S. Nock
Published by Ian Allan Ltd., Terminal House, Shepperton, Middlesex. **Price 35/-**
Size 9¼ in. by 6¼ in. 224 p.p. 48 p.p. half-tone illustrations. 1 colour plate. Two fold out line drawings.

The electrification of the Liverpool, Manchester-Euston main line is without a doubt, the greatest work of railway reconstruction that this country has ever seen. It has succeeded in changing the whole image of Britain's railway system from the archaic, poorly run concern of the 1950's, to the highly efficient modern railway that it is now, following, it might be added, in the best traditions of its forerunner, the 'Premier Line'.

This book, with its highly appropriate title of 'Britain's New Railway', sets out to show in considerable detail the magnitude of the reconstruction scheme, involving as it does, bridge and station reconstruction, track realignment, resignalling and hew distinctive locomotives and stock. The Author, Mr. O. S. Nock who has witnessed much of the work at first hand, has gone to great lengths to describe, in his own very readable way, the history and origins of the electrification scheme, its construction and the setting up of new organisations such as the District Electric Depots to deal with this completely new field, He also includes a most interesting chapter describing the transition between the old and the new, the changes in train services, and the training of drivers.

THE DUBLIN AND LUCAN TRAMWAY

By A. T. Newham
Published by the Oakwood Press, Tanbridge Lane, Lingfield, Surrey. **Price 9s 6d**
Size 8 in. by 5¼ in. 40 p.p. 19 half-tone illustrations. 1 p.p. map.

Until the publication of this booklet, very little had been known or published about the four concerns that constituted the Dublin and Lucan Tramway. The Author has gone to great lengths to present an accurate historical account of each, including details of the steam and electric trams operated.

The Dublin and Lucan Electric Railway Company accounted for a major part of the total route, which stretched from Kingsbridge on the outskirts of Dublin, to Leixlip, and it was unusual in the respect that it was twice rebuilt to a different gauge. The text is very sensibly divided into three sections, each corresponding to one of these gauge revisions and including all appropriate data. The booklet, which is more than a 'dry' history, will not only be of interest to tram enthusiasts, but to all whose interest lies in public transport.

A HUNDRED YEARS OF ROAD ROLLERS

Published by The Oakwood Press, Tanbridge Lane, Lingfield, Surrey. **Price 18s**
Size 10 in. by 8¼ in. 75 p.p. 1 colour plate. Profusely illustrated.

Published for Aveling Barford Ltd., and with an introduction by their Chairman, this book describes the evolution of the road roller from the early steam rollers built by Thomas Aveling, to the 'Master Pavior' diesel roller. Profusely illustrated, and printed on glossy art paper, the book is divided into 38 sections, each dealing with a separate year in the development of the road roller, with appropriate illustrations and descriptive matter. For traction enthusiasts, it is an attractive library addition.

RAILWAY ANTHOLOGY

By P. B. Whitehouse
Published by Ian Allan Ltd., Terminal House, Shepperton, Middlesex. **Price 35s**
Size 9¼ in. by 6¼ in. 223 p.p. 1 colour plate.

Many books have taken as their subject matter the steam locomotive, and indeed the book under review is no different in that respect. It is however the first, to my knowledge, to present the steam locomotive in all its different aspects during the last century and a quarter. The 54 articles that form the book, and which were originally published during the last 60 years in magazines that are now part of the Ian Allan Group, have obviously been carefully chosen to preserve a balance between old and new. The book is divided into eight chapters, each dealing with a different aspect of the steam locomotive, as 'Some Branch Lines', 'On the Footplate', and 'History and Conjecture', which incidentally includes a fascinating article on the centenary celebrations of the Stockton and Darlington Railway, and also a projected monorail scheme between Liverpool and Manchester, originally published in 1901. Many famous writers also have contributions in the book, including W. A. Tuplin, Charles F. Klapper, Hamilton Ellis, J. I. C. Boyd, L. T. C. Rolt, and many others.

PAINTED ENGINES

By J. H. Russell
Published by George Allen and Unwin Ltd., Ruskin House, 40 Museum Street, London, W.C.1. **Price 55s**
Size 10 in. by 7½ in. 94 p.p. 16 colour plates. 15 half-tone illustrations.

If you remember the beautifully painted engines that were often used in fairgrounds, the chances are that the smell of steam and cylinder oil will bring back a touch of nostalgia, and no doubt conjure up a picture of an ornately painted engine, rocking slightly as it effortlessly turns its dynamo. If you do not remember these machines, the coloured plates in this book will fascinate you, and possibly even persuade you to visit one of the rallies held in many parts of the country.

The book includes 16 pictures of all manner of engines from industrial or agricultural, to showmans and 'portables', all of which can now be seen in traction engine rallies. It also includes an account of their histories—often quite colourful. The tremendous amount of work done on the machines by enthusiasts is illustrated by an additional photograph of each machine before restoration. Also included is a chapter on the operation of traction engines, which I found most interesting.

THE MERSEY RAILWAY

By G. W. Parkin
Published by The Oakwood Press, Tanbridge Lane, Lingfield, Surrey. **Price 15s**
Size 8 in. by 5¼ in. 64 p.p. 8 p.p. half-tone illustrations.

The Mersey Railway today is, perhaps surprisingly, the busiest line in the provinces. Carrying 10,000 passengers hourly into Liverpool each morning, the line operates over 500 trains every weekday, requiring 24 six-car sets every hour in each direction. It has not however always carried this volume of traffic, and this book tells of the somewhat erratic career of the little line connecting Liverpool with towns on the other side of the River Mersey.

But for the confidence of Major Isaacs, the Company would have found the raising of the necessary capital to build the line an impossible task, indeed the Company was practically insolvent throughout the days it used steam locomotives. The sulphurous atmosphere of the tunnel below the River Mersey drove passengers away from the line, and on to the rather slower, but healthier ferry, and the Company in 1903 was forced to change to outside third rail electric traction. The book includes many personal reminiscenses, sections on rolling stock details, train services, traffic working, accidents, and personalities connected with the line.

A male linnet simply would not *face* the camera—has just fed his family

focus your camera on birds

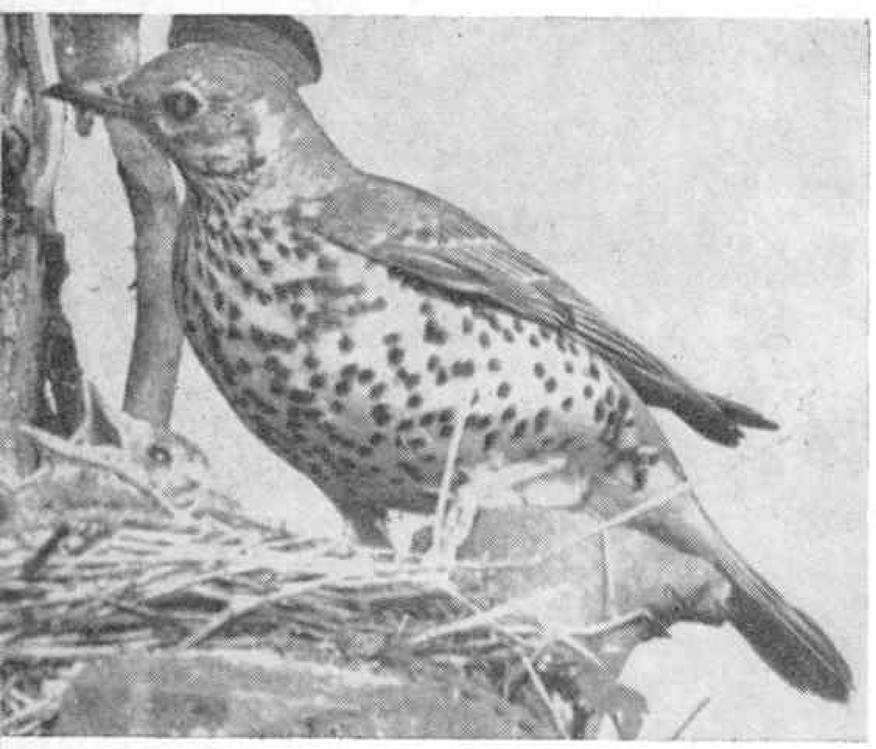
IT was as a lad in my own garden that I first tried my hand at bird photography, and although that was many years ago I still find the hobby as thrilling as ever. Some of the birds there were quite tame, but when I tried to photograph them I soon realised that some sort of concealment was necessary, so I stretched a piece of sacking over a few bamboo canes and got beneath it. In the sacking I made three peepholes through which to watch my quarry and to accommodate the lens of the camera. Birds only behave naturally when not conscious of being watched, and the real thrill of this hobby comes from pitting our skill and patience against their cunning.

But my bamboo hide was a frail structure and although it met my needs for garden photography I knew that something more substantial was needed. My next hide was a portable affair consisting of four poles, each 6 feet long, which, when driven firmly into the ground, were kept in position by two pieces of wire placed criss-cross over the top. The complete framework was then covered with sacking through which the usual peepholes were made. It was not difficult to make, and it is under similar conditions that most photographs of birds have to be taken.

When birds are nesting is the best time for the beginner to attempt photography, although I cannot emphasise too strongly the need for every consideration to be given to the birds themselves. Nobody who lacks a genuine interest in them should ever try to photograph them, for on no account should they be subjected to undue hardship or embarrassment.

A little food or a few peanuts attract blue-tits near enough to be photographed through the window

Below: mistle-thrush at nest



To this end the utmost care must be taken when erecting the hide, and for such shy species as, for instance, carrion crows, it is advisable to first fix it some distance from the nest, thus giving the birds an opportunity to get accustomed to it. Then bring it a little nearer on each alternate day until it stands at the right distance for photography. Because birds are nervous of things which shake or rattle, logs or stones at the bottom of the hide prevent the sacking being rustled by the wind.

The final distance at which the hide must be placed from the nest depends largely upon the size of the bird to be photographed and varies from about 4 feet for the smaller species up to 8 feet for birds the size of a wood pigeon.

But which is the best type of camera for bird photography? This is the question which faces every newcomer to this fascinating hobby and to which there can be no definite answer. Different photographers have different opinions and although the wonderful little miniatures are very popular, they are rather expensive and have such small negative space that focusing has to be done very accurately and I recommend the beginner to get something larger.

My first camera was a quarter-plate reflex, with a top focusing hood, but it had a focal-plane shutter which was rather noisy and so far as bird photography is concerned the more silent the shutter the better. The top focusing device is, however, a great asset for it enables you to watch the bird concerned right up to

the last moment before taking its picture, and for stalking birds, as well as for flight pictures, the reflex is a first-rate camera. I am still using it.

In addition to the reflex I have a folding camera which also takes a quarter-plate picture. It is fitted with what is known as a Compur shutter which is much less noisy than the focal plane, and the lenses I use are interchangeable on both cameras. So far as lenses are concerned I advise an 8-inch focal length anastigmat lens which copes with all situations up to a distance of 6 feet from the nest. For longer distances a telephoto lens is advisable.

For the beginner a suitable camera can usually be purchased at a second-hand shop. Its price naturally depends upon its quality but splendid models (miniatures excepted) are within the reach of the average youngster's pocket. However, nature photography is a hobby which, with decent luck, soon covers its own expenses for in many magazines there is a ready market for good photographs of birds. Other items can be added to your photographic equipment as finance becomes available and every gadget you purchase will add joy and thrill to the hobby.

One very essential thing is a rigid tripod, while an electric exposure meter is invaluable; but I find a shutter speed of 1/25 sec., with a lens aperture of f.8, to be sufficient in most cases. Much depends upon the lighting conditions at the nest and this is where an exposure meter proves its worth.

So much, then, for the equipment. What about the birds? Some are more easy to photograph than others, among them being blackbirds, thrushes, and greenfinches, for they have a habit of standing still on the rim of their nest for a second or two after feeding each chick in turn, and that is the moment to take the picture. It is best to wait until the young have hatched before attempting photography because some birds quite freely forsake their eggs if disturbed, but their attachment to their chicks is much stronger.

It often happens, however, that before a photograph can be taken, protruding twigs or leaves have to be removed because nothing must come between the nest and the lens. This is a matter which calls for the utmost care and caution. To cut away such foliage is a dangerous practice, for it exposes the nest to the keen-eyed furred and feathered bandits. It also deprives the nestlings of shade and shelter.

I overcame the difficulty by tying the projecting herbage out of the way, allowing it to revert to its original position when I have taken the photographs. For this purpose a green twine it preferable because it matches its surroundings.

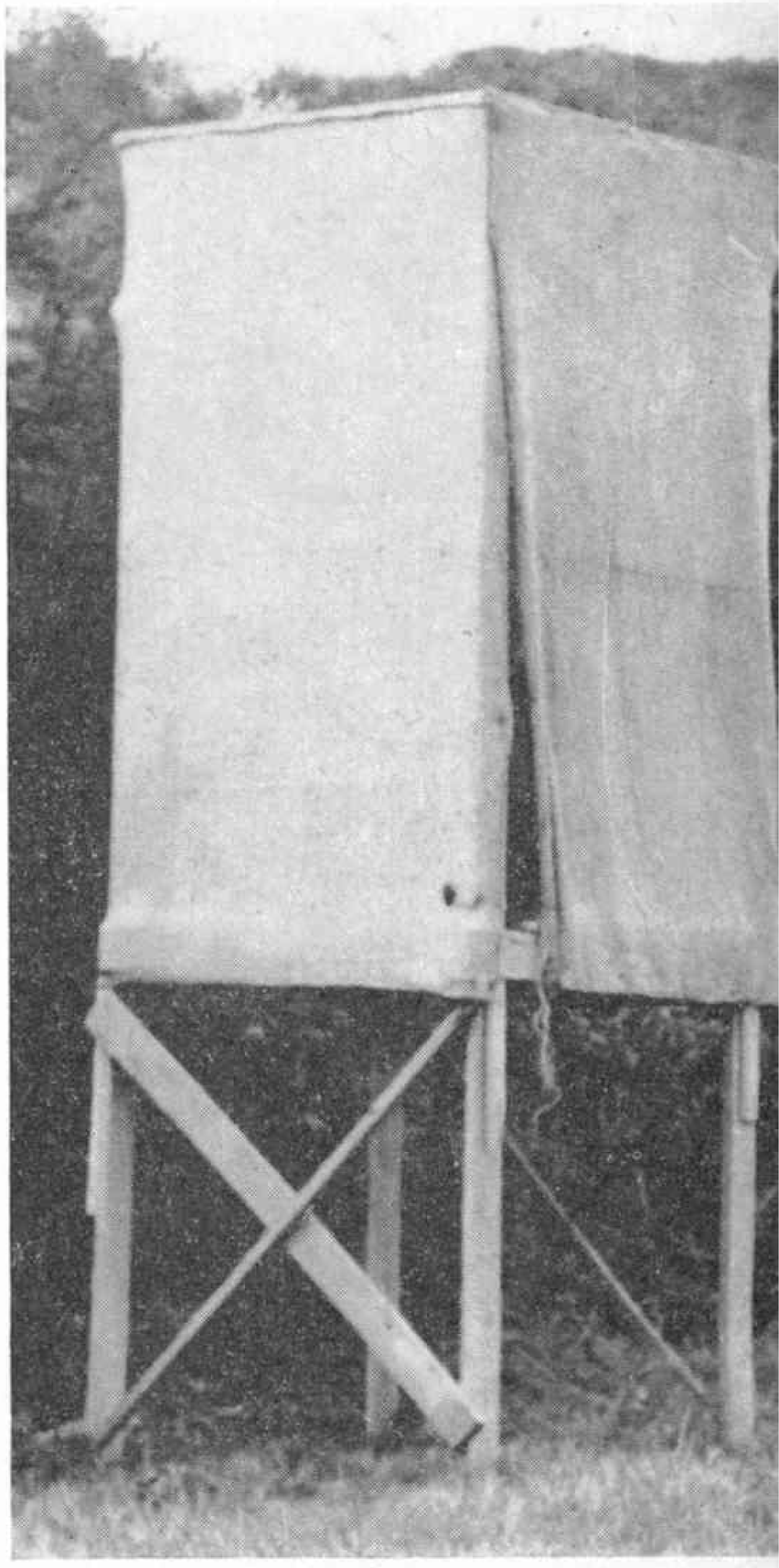
You will find it helps to take a friend with you, particularly where shy birds are concerned. As you both approach the nest together you will naturally be seen by the birds concerned, but because birds cannot count, when you, yourself, enter the hide, your companion will walk away, and the birds not being able to distinguish between two persons arriving and one person leaving, will believe the hide to be empty.

It's a ruse that works well and, as a rule, the birds are back at the nest within a few minutes attending to their brood. One other little item of equipment which must not be overlooked is a small folding stool, for to be comfortably seated during your vigil makes all the difference.

Strict silence must be observed. If you bring lunch be careful not to rattle the paper in which it is wrapped and when the time comes for you to leave the hide choose a moment when the birds are away. Fasten the covering of the hide carefully, not forgetting to release any foliage you have tied back, so that the birds may continue to enjoy the cover and seclusion they need.

Bird photography is a most fascinating hobby, but there is no short cut to perfection. Its success depends upon the patience and perseverance you put into it. So good luck to you and good photographs.

B. Melville Nicholas



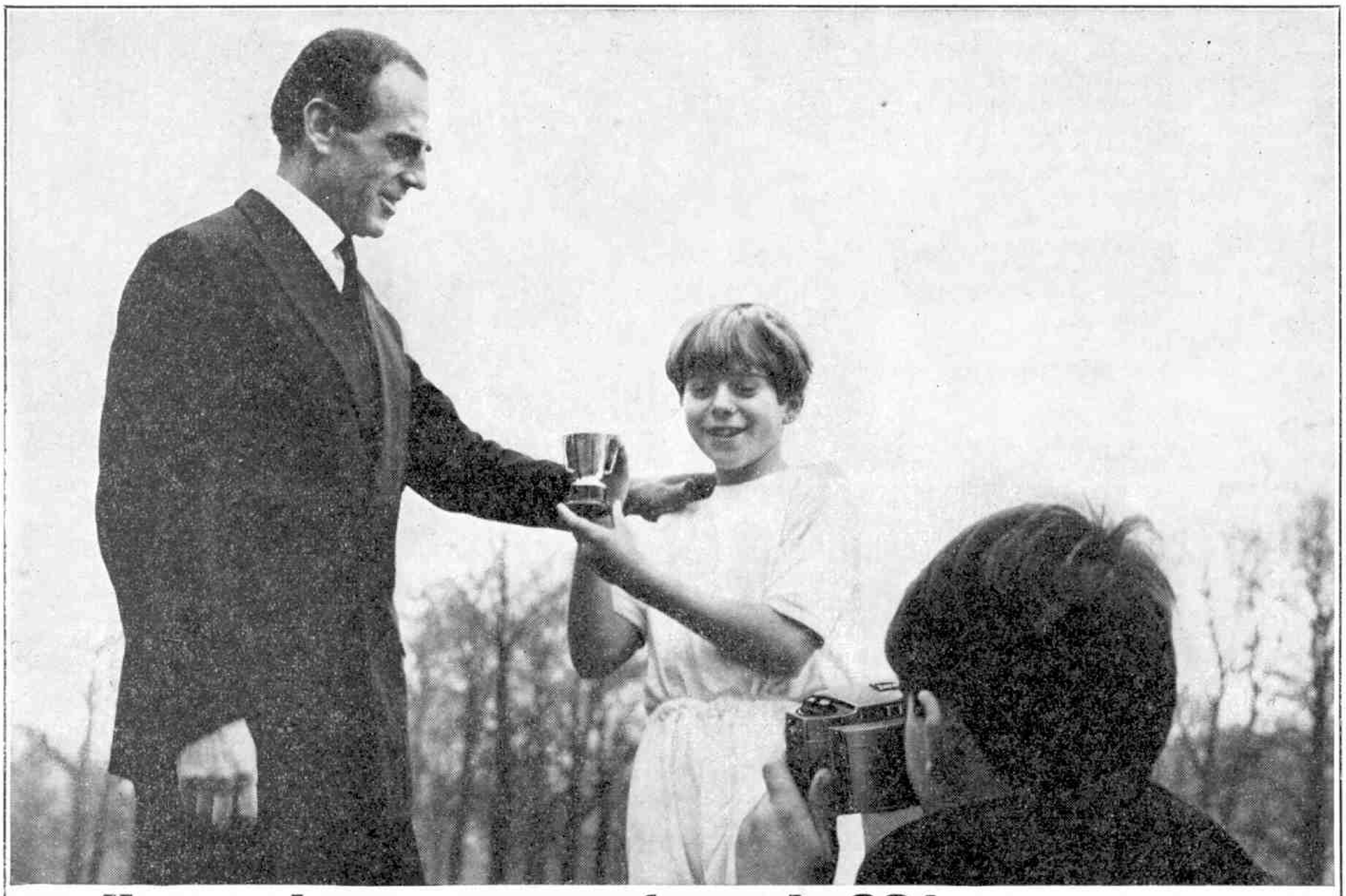
Definitions of photographic terms

Aperture The 'size' of the lens which allows light to enter the camera. Different size apertures are indicated by different numbers on the outside of the lens, each prefaced by the letter 'f'. The higher the number the smaller the aperture and the less light admitted. The size of the aperture is regulated by the diaphragm.

Exposure The length of time the light is allowed to enter the camera. It varies according to light conditions and the brighter the light the shorter the exposure. Most birds nest in shady surroundings and to arrive at a correct exposure an electric exposure meter is very useful. **Lens** The lens is really the 'eye' of the camera through which the light enters through the 'aperture' as explained above. Lenses are obtainable in different sizes according to the camera being used and the subjects being photographed. They must be kept thoroughly clean and, on no account, must the glass be scratched. **Shutter** The shutter is the device which regulates the time of exposure and is mainly of two kinds, namely, the focal-plane which is generally found on reflex cameras, and the Compur (or compound) on folding cameras. The focal-plane shutter consists of a spring blind, while the Compur is made up of thin blades. When the trigger is pressed the shutter opens and allows the light to reach the sensitised plates or film, and the photograph is taken.

The photograph at the top of the page shows a greenfinch with its young

The author's 'hide' in the photo above is an elevated one used for the photography of birds and nests in tall bushes



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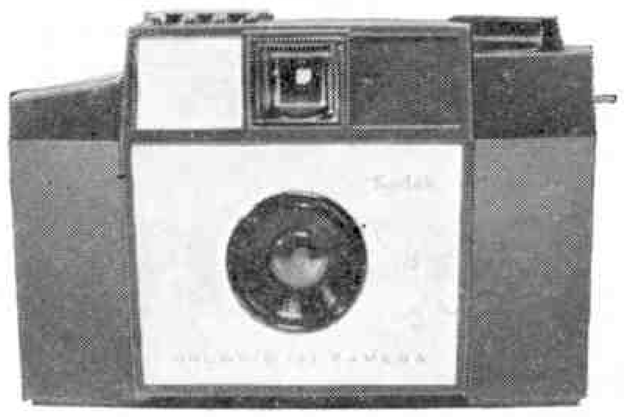

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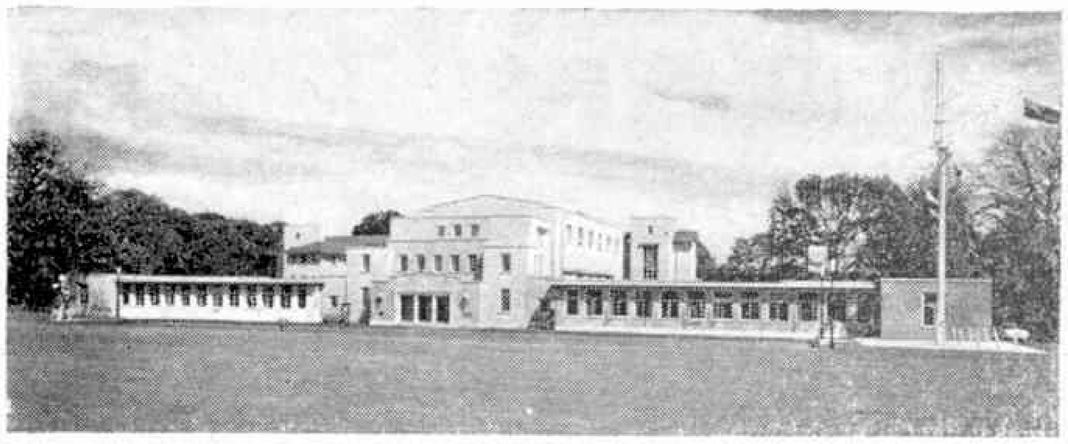

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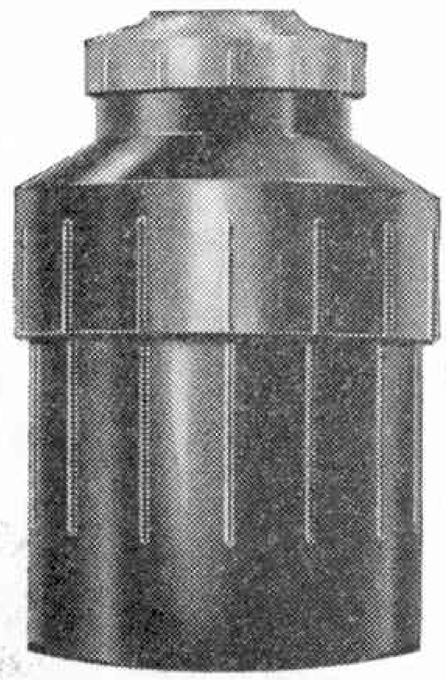

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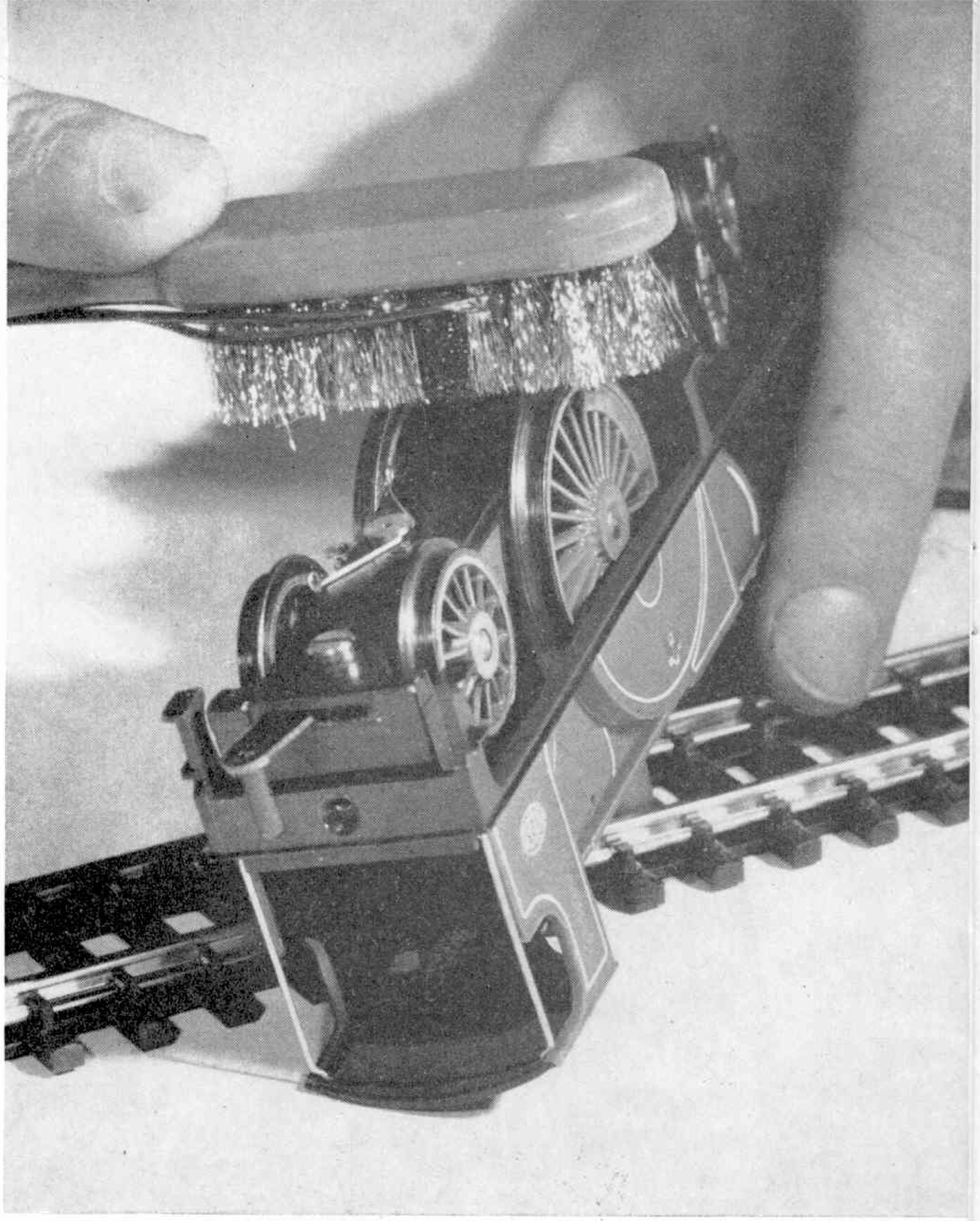
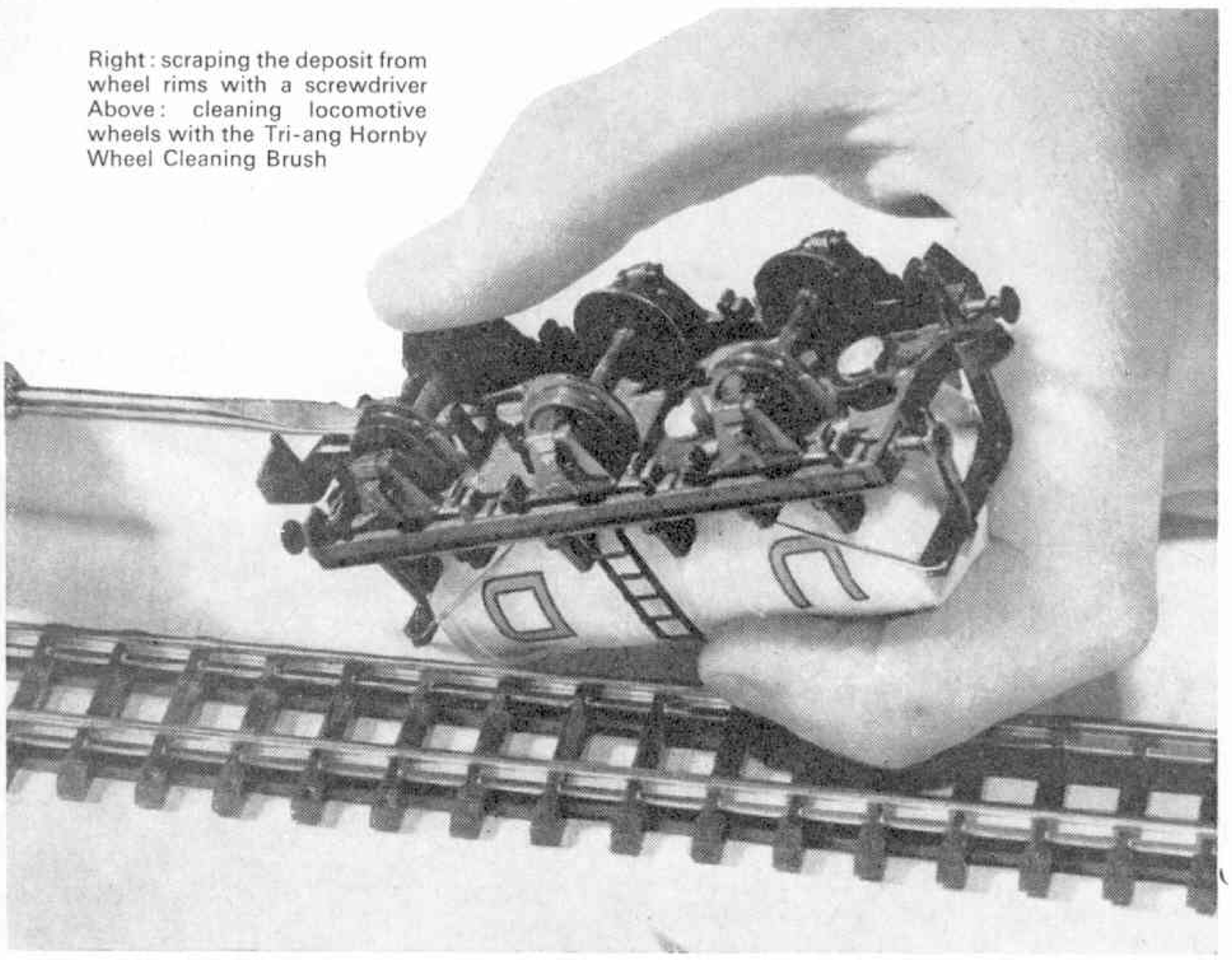
WHY NOT SPRING CLEAN

by Mike Rickett



Have you ever stopped to consider why your model railway operates faultlessly hour after hour, occasionally under the most adverse of conditions, or do you wonder why 'gremlins' unaccountably appear to cause derailments and other annoyances? The fact that a complex machine like a Tri-ang Hornby layout will operate for long periods without attention, is a major electrical and mechanical achievement. Like all machines, however, its greatest enemies are dirt, dust and corrosion which, if not the subject of occasional attention, can eventually ruin all working parts of a layout.

Without regular cleaning and maintenance, you will find mysterious faults developing for no apparent reason. The most common are trains slowing down abruptly on a certain section of track, derailments occurring at certain locations on points or curves, or that most annoying of troubles—a locomotive that simply refuses to move until full power has been applied, and even more annoying, shooting off at a scale 200 m.p.h. when it is applied. Most of these faults, or 'gremlins' can be readily traced to lack of maintenance in one way or another. All the troubles that I intend talking about concern either the track or points, which between them need the most attention. The cleaning of rail surfaces, the most onerous and most important job, is one that requires to be done very regularly—at least before every operating session, and preferably afterwards as well.

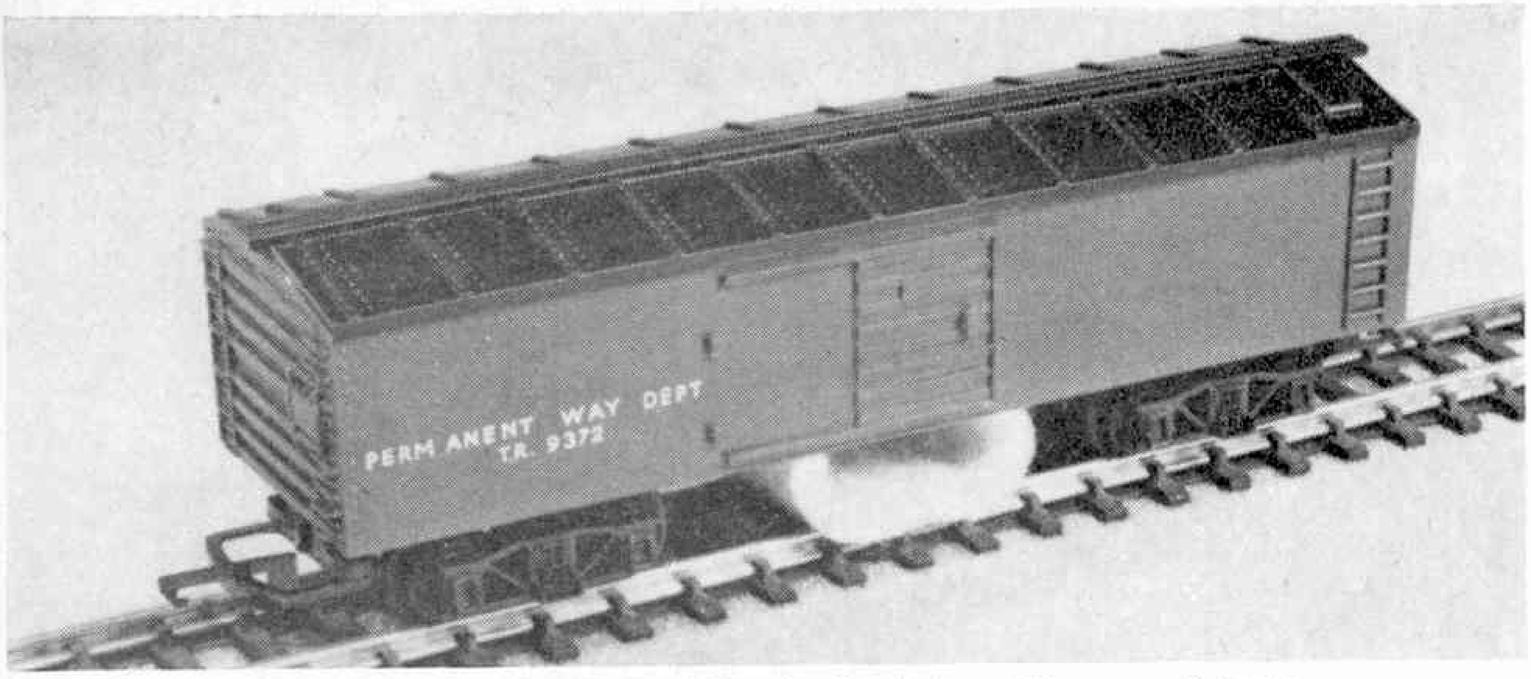


Right: scraping the deposit from wheel rims with a screwdriver
Above: cleaning locomotive wheels with the Tri-ang Hornby Wheel Cleaning Brush

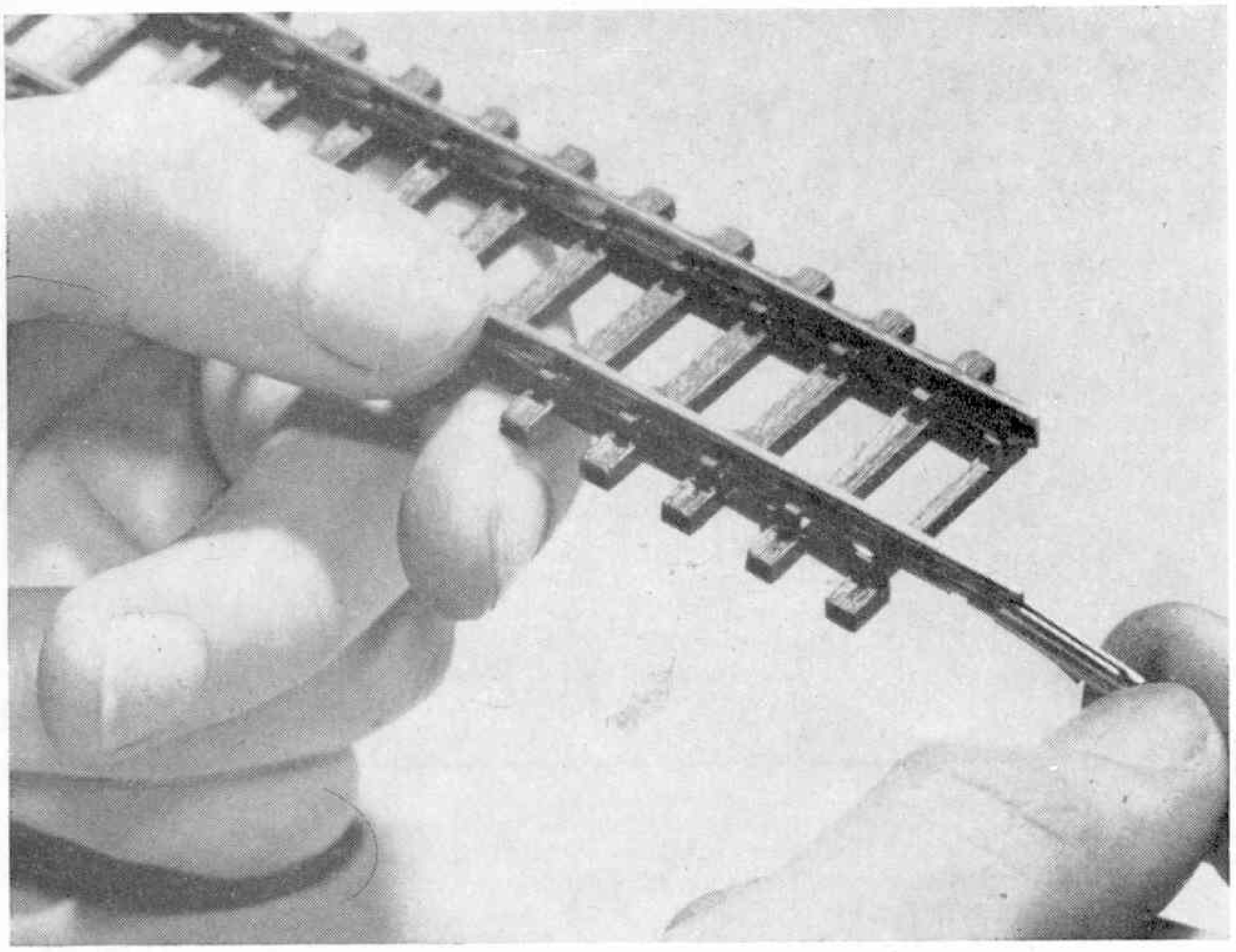
You may have read in other magazines that chemical compounds such as carbon tetrachloride and trichlorethylene are suitable for this purpose, and so they are, but unfortunately if you do use them, you stand a chance of damaging the sleepers on your track. Both materials have the affect of melting polythene or polystyrene, the material used for your sleeper base. These substances can also have a harmful affect if inhaled deeply, and it is not therefore advisable to use them.

Where only a slight layer of dust lies on the rail surface, the Tri-ang Hornby Rail Cleaning Wagon (R344) is ideal, since it can be coupled into a train and pushed round the layout. The suggested liquid recommended to saturate the pad in the Track Cleaning Car is methylated spirits, which will clean the track and not react with the plastic sleeper base.

Under no circumstances should an abrasive



Above: the Tri-ang Hornby Track Cleaning Car. Below: sliding a new fishplate on to the end of the rail. Note how the rail has been pushed out beyond the sleeper



such as *sandpaper* or emery cloth be used, since these will remove the protective coating of tin from the rail, making it more liable to rust if the atmosphere is at all inclined to be damp. Although this coating is adequate under all normal circumstances, a very humid atmosphere will damage the rail, and for that matter, any other metal surface. It would be best under such conditions to move the layout to another location.

If the layout concerned has not been in use for some considerable period, the probability is that a layer of dust and fluff will have formed, and it is, of course, essential that this be removed before operation is commenced. I have always found it best to move any items not fixed down to the baseboard so that they may be cleaned separately. A vacuum cleaner with the brush fitment removed is undoubtedly the quickest way of clearing loose fluff and grit. Also the possibility of damage occurring to structures is minimised, and a fine brush can be used to do any additional cleaning that may be necessary. Where a layout has not been in use for a considerable time, it is always best to inspect the track to make quite sure that the fixing pins have not worked loose up to, or over, the rail surface. These can easily cause derailments and it is always worth pressing the pins well home with a pair of pliers.

Faulty fishplates may be the cause of mysterious electrical faults, usually dead sections or voltage drops. These will become noticeable when a locomotive suddenly slows down for no accountable reason, or simply stops altogether and refuses to move. Once the approximate location has been discovered, the fishplates can be examined and tightened if loose. Should this not result in any immediate improvement, it is possible for dirt to be acting as an insulation between the fishplate and the rail, and it will be necessary to remove the piece of track from the layout and to clean both the fishplate and the rail. The fishplate may also have become corroded, and in this case I would personally be inclined to replace the fishplate with a new one, rather than to spend time cleaning the other items. Fishplates are, after all, inexpensive, and easily obtainable from most Tri-ang Service Agents and other regular stockists.

Once the offending fishplate has been located and the piece of track concerned lifted from the layout, the rail itself can then be pushed out of the plastic base by bending down the end sleeper. The position of the old fishplate is scratched on the underside of the rail and a pair of small pliers, preferably of the round nose type, used for extracting the old fishplate from the rail end. Should this have been welded on during manufacture, any roughness on the underside of the rail should be filed down before the new fishplate is pushed on. When sliding this on, try to avoid pushing the fishplate over the mark scratched on the underside of the rail. The fishplate will normally be a tight fit, but you may find it necessary to lock it to the rail by making an indentation with a centre punch. Once you are quite satisfied with the fit, the rail can be threaded back on the sleeper base, making sure that the chairs actually grip the rail web.

Checking Points

Points that do not function properly are infuriating, and time spent in cleaning and checking the action of the mechanism is time well spent. If the point is electrically operated, it would be as well to examine the leads to make sure that the plugs are bright and clean, and that no fluff or grit has entered the mechanism sockets. Push the leads back firmly into these sockets. Check the mechanical action of the mechanism and if the blades do not close up tight against the stock rails, examine the space between to make sure that no dirt is preventing the blade from closing properly. Any loose material can be removed with tweezers, and the backs of the blades and stock rails scraped with a screwdriver to ensure that no resistance is offered to the current. The plastic frog at the other end of the point is just as, if not more, important, and this should also be scrutinised carefully to make sure that no deposit has built up sufficiently to raise the wheel flange and cause a derailment. This may sound improbable, but I have known it to happen. Any deposit that may have formed can be carefully scraped off with a screwdriver, but it is important that the plastic itself is not damaged. Tweezers will also be found very useful for removing fluff and other material from under stock rails, and between the check rails at both sides of the point.

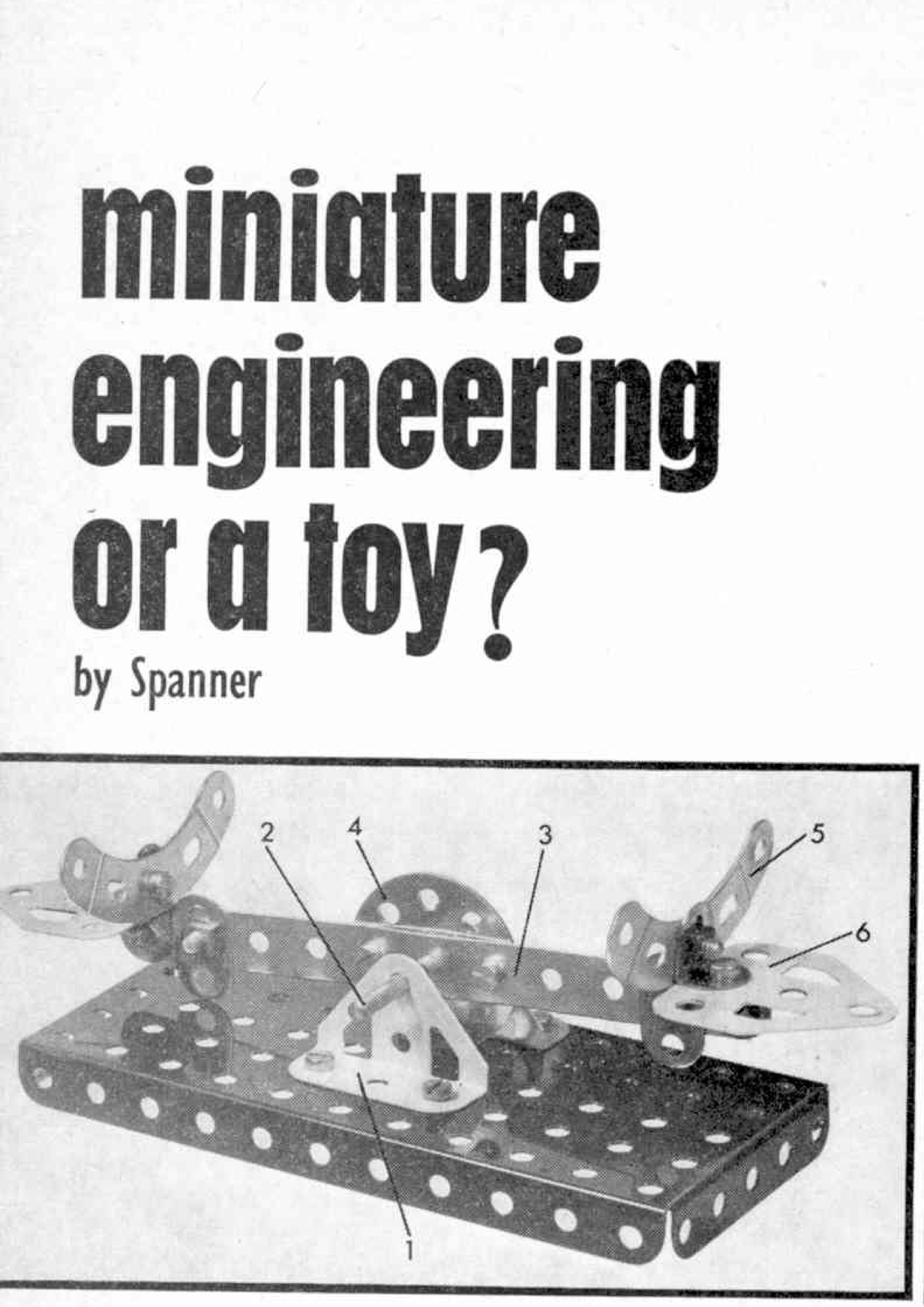
Wheel care

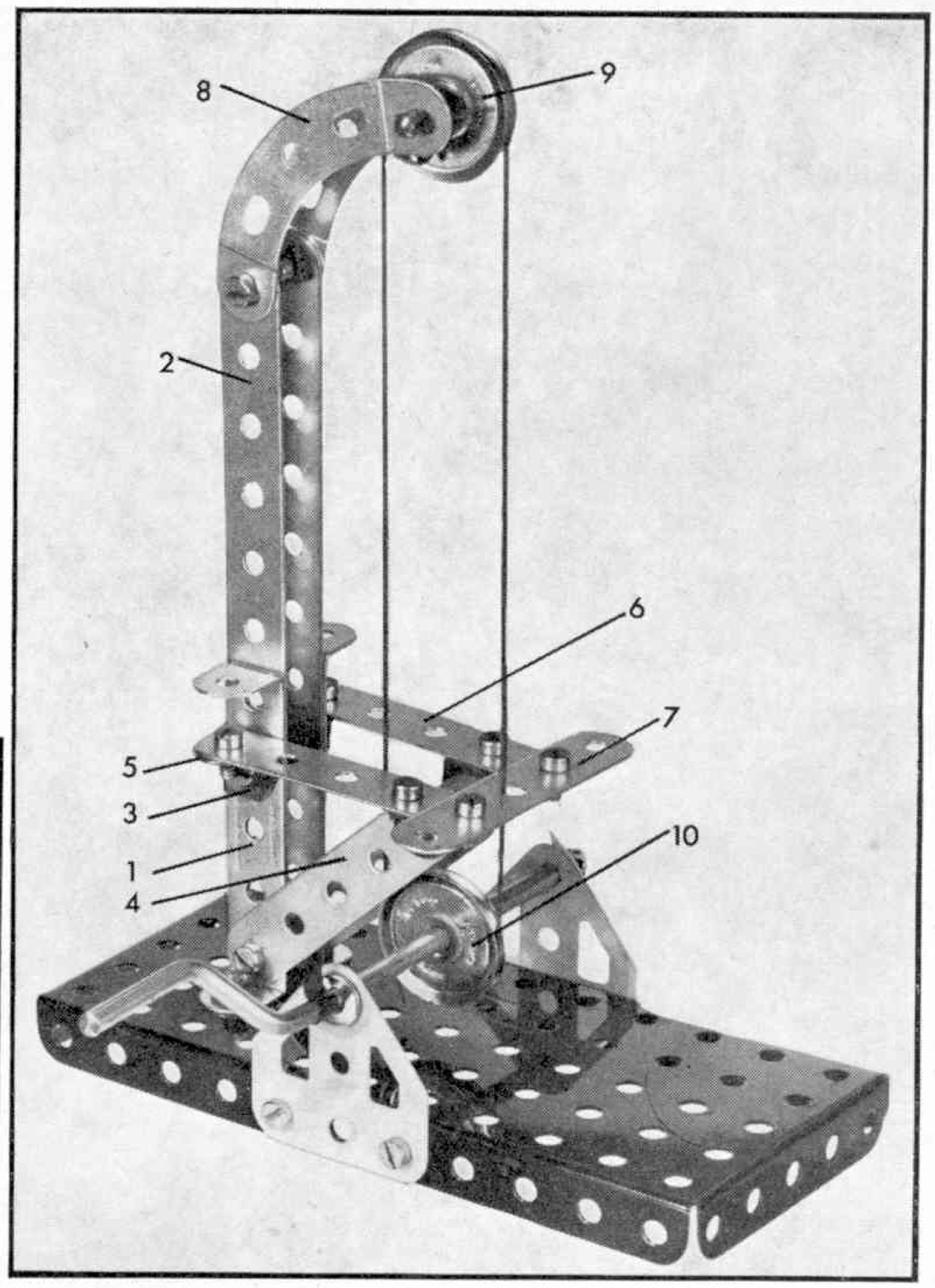
Rolling stock wheels are often to blame for derailments, and it is amazing how quickly a deposit can build up. If you make a habit of examining your layout and rolling stock regularly, the work of removing any deposit will be slight, but if this is only done occasionally, the task is likely to be a considerable one. All fluff and hairs should be cleared from axles, and any deposit of carbon on the wheels scraped off with a knife or screwdriver.

Locomotive wheels should also be examined and cleaned if their performance is not to suffer. An engine that runs jerkily, emitting sparks as the wheel rims touch the rail, will probably be long overdue for wheel cleaning. I have found the RT279 Tri-ang Hornby Wheel Cleaning Brush excellent for this purpose. In the past it has been necessary to revolve the wheels by first connecting the current, and then scraping any dirt off as they revolve. The Wheel Cleaning Brush serves both these purposes, and has the added advantage of not doing any damage to the wheel surfaces. All that is necessary is for the power leads to be connected into one of the Power Connecting Clips on your layout—provided that there are more than two—and switching the current on. Place the brush across the locomotive on one pair of wheels and press lightly. The brush will clean the wheels as they revolve.

miniature engineering or a toy?

by Spanner





IS the Meccano model-building system simply an advanced kind of toy or is it a complete miniature engineering system in its own right?

This is the question that often crops up in conversations between Meccano owners and is one which, I think, has no definite answer. Different people have different opinions. The older enthusiast, for example, builds detailed reproductions, often animated, of real-life equipment and structures, therefore, he regards the system as purely engineering. On the other hand, the younger person tends to build small models that are only basic representations of general types of equipment found in real life. He will, for example, build a car, rather than a particular make of car, and then push it round the floor, accompanied by suitable sound effects. Used in this way, Meccano is really a toy.

The Band Saw

In this article I feature three small constructions that aptly illustrate the matter in question. The first uses Meccano as an engineering system, the second as a toy, and the third as a combination of the two. Built from the Meccano Playset, is a model Band Saw that clearly shows the workings of this type of machine.

Two 2½ in. by 2½ in. Double Angle Strips 1 are bolted to a 5½ in. by 2½ in. Flanged Plate with a space of one hole separating them. Each Double Angle Strip is then extended six holes by a 5½ in. Strip 2, at the same time bolting a Double Bracket 3 and two 2½ in. Strips 4 in place. The Bolts holding the Double Bracket also secure two Angle Brackets 5. An Angle Bracket is fixed to each Strip 4 and is then joined to each Angle Bracket 5 by a 2½ in. Strip 6. Strips 6 are in turn connected by another 2½ in. Strip 7.

To the top of 5½ in. Strips 2 two 2½ in. Stepped Curved Strips 8 are added. In the end holes of these a 1 in. Rod carrying a 1 in. Pulley with boss 9 and a Spring Clip is journalled.

Turning to the base, two Flat Trunnions are bolted in the centre of the side flanges of the 5½ in. by 2½ in. Flanged Plate. Mounted in the apex holes of these Flat Trunnions is a 3½ in. Crank Handle, held in place by Spring Clips, Washers spacing the Spring Clips from the Trunnions. Finally, a 1 in. Pulley 10, fixed on the Crank Handle, is connected to Pulley 9 by a band of Cord representing the continuous saw blade. Note that the Cord is threaded through the centre hole in Strip 7.

Parts required

2 of No. 2	1 of No. 19s	4 of No. 38
5 of No. 5	2 of No. 22	2 of No. 48a
1 of No. 11	3 of No. 35	1 of No. 52
4 of No. 12	20 of No. 37a	2 of No. 90a
1 of No. 18b	20 of No. 37b	2 of No. 126a

The See-Saw

Moving on to the model that could be described more as a toy than a piece of engineering apparatus, we have that object without which no children's playground would be properly equipped—the see-saw. Admittedly, it is only a very simple version of a see-saw, but it's fun, and again, it is entirely built with the Playset.

A base is built up from a 5½ in. by 2½ in. Flanged Plate to which two Trunnions 1, spaced apart a distance of two holes, are fixed. Journalled in the apex holes of these Trunnions is a 2 in. Rod 2 which carries the moving part, or arm, of the see-saw.

The arm, itself, is obtained from a 5½ in. Strip 3, bolted to an 8-hole Bush Wheel 4 that is mounted on Rod 2. At each end of the Strip a combined seat and hand-grip is provided by a Flat Trunnion 5, attached to a 2½ in. Stepped Curved Strip 6 by an Angle Bracket. The Bolt fixing the Angle Bracket to the Flat Trunnion also holds another Angle Bracket in place beneath the Flat Trunnion, and it is this Angle Bracket which is bolted to Strip 3 to secure the seat in position on the arm.

To finish up, 'stops', represented by Fishplates, are added at the ends of the arm to ensure the seats do not hit the base. Rod 2, incidentally, is prevented from sliding in its bearing by a Spring Clip.

Parts required

1 of No. 2	1 of No. 24	1 of No. 52
2 of No. 10	1 of No. 35	2 of No. 90a
4 of No. 12	14 of No. 37a	2 of No. 126
1 of No. 17	14 of No. 37b	2 of No. 126a

The Climbing Monkey

Outfit No. 4 contains all the parts necessary to complete the third and final model which is

most complicated of the three. As already mentioned it illustrates Meccano both as a toy and an engineering system, the former because it is based on a Climbing Monkey amusement and the latter because it incorporates a governor in its construction.

The base and framework is built up from a 5½ in. by 2½ in. Flanged Plate 1, to each end flange of which a Flanged Sector Plate is bolted, at the same time fixing a 5½ in. Strip 2 in position. The Flanged Sector Plates are connected, via Angle Brackets, by another two 5½ in. Strips joined in the centre by a 1½ in. by ½ in. Double Angle Strip 3 and two Reversed Angle Brackets 4.

To the end of each Strip 2 a 2½ in. by ½ in. Double Angle Strip 5 is attached and these are connected by a 2½ in. Strip, at the same time bolting two 12½ in. Strips 6 in position. At the top, these Strips are joined by a Trunnion and, at the bottom, are braced by two 5½ in. Strips.

A Double Bracket is bolted to the 2½ in. Strip connecting Double Angle Strips 5 and to this is fixed a 1 in. by ½ in. Double Bracket 8. A 1½ in. Rod carrying a 1 in. loose Pulley is mounted in the lugs of Double Bracket 8, being held in place by Spring Clips.

Secured to Flanged Plate 1 is a Trunnion 9, to which an Angle Bracket extended by a Fishplate, is fixed. A 2 in. Rod, carrying a Cord Anchoring Spring, is journalled in the Fishplate and in Flanged Plate 1, being held in place by a Spring Clip beneath the Plate and by a 1 in. fixed Pulley 10 above the Fishplate. The Pulley, which is spaced from the Fishplate by four Washers is secured with its boss uppermost. It also carries a ⅜ in. Bolt in the boss.

The governor is built up from two 8-hole Bush Wheels 11, to each of which two Angle Brackets are bolted through diametrically opposite holes. These Angle Brackets are then connected by two expanding arms, one built up from two Fishplates loosely attached to a 1 in. Pulley 12 by a ⅜ in. Bolt held in its boss, and the other from another two Fishplates, loosely attached to two 1 in. Pulleys 13 by a 1 in. Rod held in their bosses. The Fishplates are lock-nutted to the respective Angle Brackets fixed to Bush Wheels 11, but they must be free on the Bolts.

The complete unit is mounted on a 3½ in. Rod 14, journalled in Double Angle Strip 3 and Reversed Angle Brackets 4, and resting on Pulley 10. Note that the upper Bush Wheel is fixed, the lower must be free to move on the Rod. A ⅜ in. Bolt is fixed in a 2 in. Pulley 15 to act as a handle and this is mounted on the Rod. An Angle Bracket 16 is bolted beneath lower Bush Wheel 11 and this should connect with the ⅜ in. Bolt in the boss of Pulley 10 when the model is at rest.

The 'Monkey' is obtained from two Flat Trunnions joined by ⅜ in. Bolts, but spaced apart by two Washers on the shank of each Bolt. The upper Bolt also carries a 1 in. loose Pulley, representing the Monkey's head. The Flat Trunnions lie one each side of Strips 6.

A length of Cord is tied to the Cord Anchoring Spring on the 2 in. Rod, is passed round the Pulley on the Rod held in Double Bracket 8, is taken over, a ½ in. loose Pulley on a ⅜ in. Bolt 17 fixed in Trunnion 7, and is tied to the lower Bolt in the Monkey.

When handle 15 is turned Angle Bracket 16 catches the ⅜ in. Bolt in Pulley 10, causing the 2 in. Rod to turn. This takes in the Cord and makes the Monkey climb. As the handle is turned faster, the arms of the governor are thrown outwards which subsequently lift the lower Bush Wheel 11. At a certain speed the Bush Wheel is raised high enough to disconnect Angle Bracket 16 from the ⅜ in. Bolt and the Monkey stops climbing. The idea is to see how fast you can make the Monkey climb.

Parts required

2 of No. 1	1 of No. 18b	12 of No. 38
6 of No. 2	1 of No. 20a	1 of No. 48
1 of No. 5	4 of No. 22	2 of No. 48a
5 of No. 10	2 of No. 22a	1 of No. 52
1 of No. 11	1 of No. 23	2 of No. 54
1 of No. 11a	2 of No. 24	6 of No. 111c
10 of No. 12	3 of No. 35	2 of No. 125
1 of No. 16	48 of No. 37a	2 of No. 126
1 of No. 17	39 of No. 37b	2 of No. 126a
		1 of No. 176

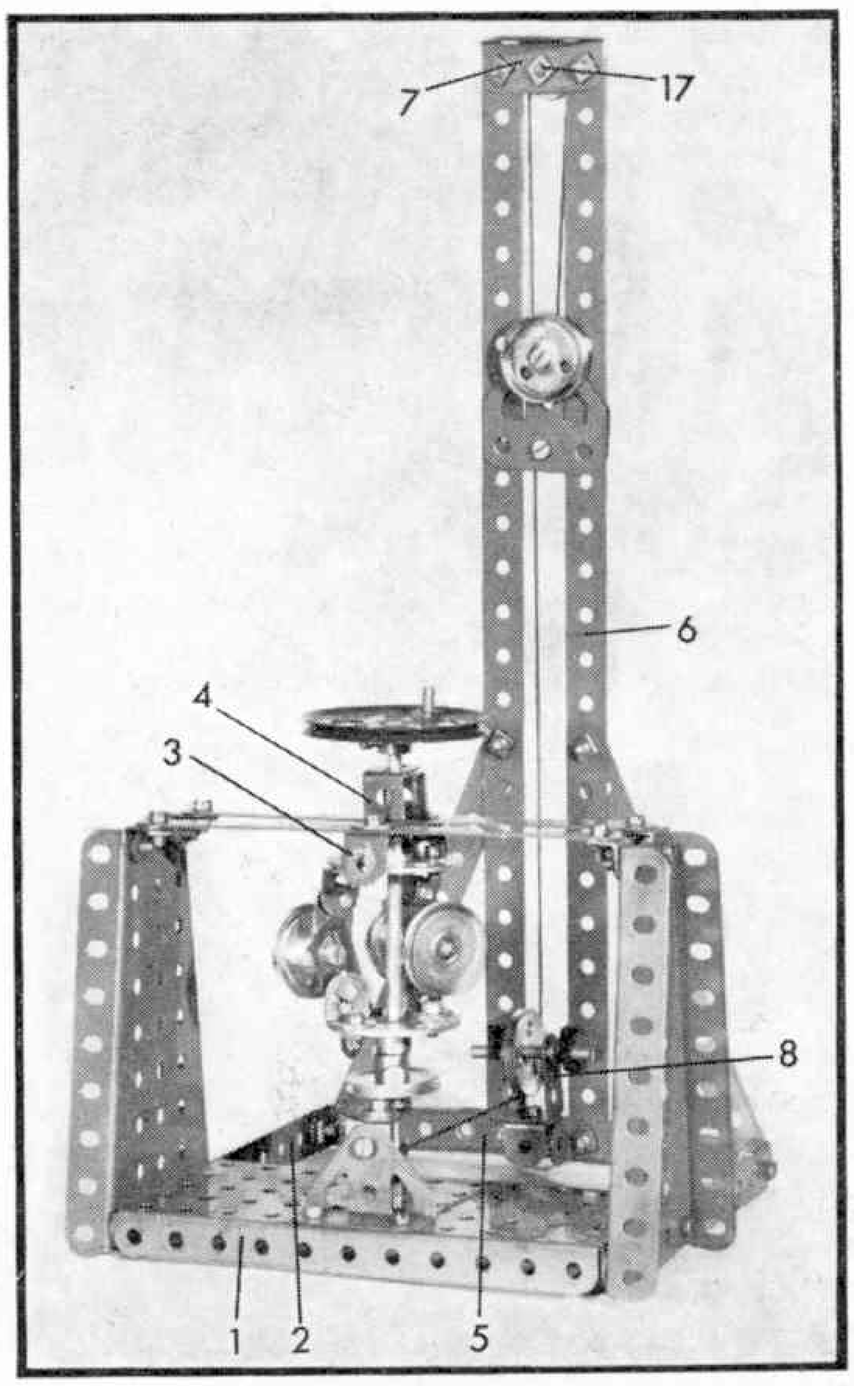
Answers to puzzles on page 13

A. Referred.
B. Train, Car, Bike, Bus, Van, Lorry, Coach.
C. Laughter.

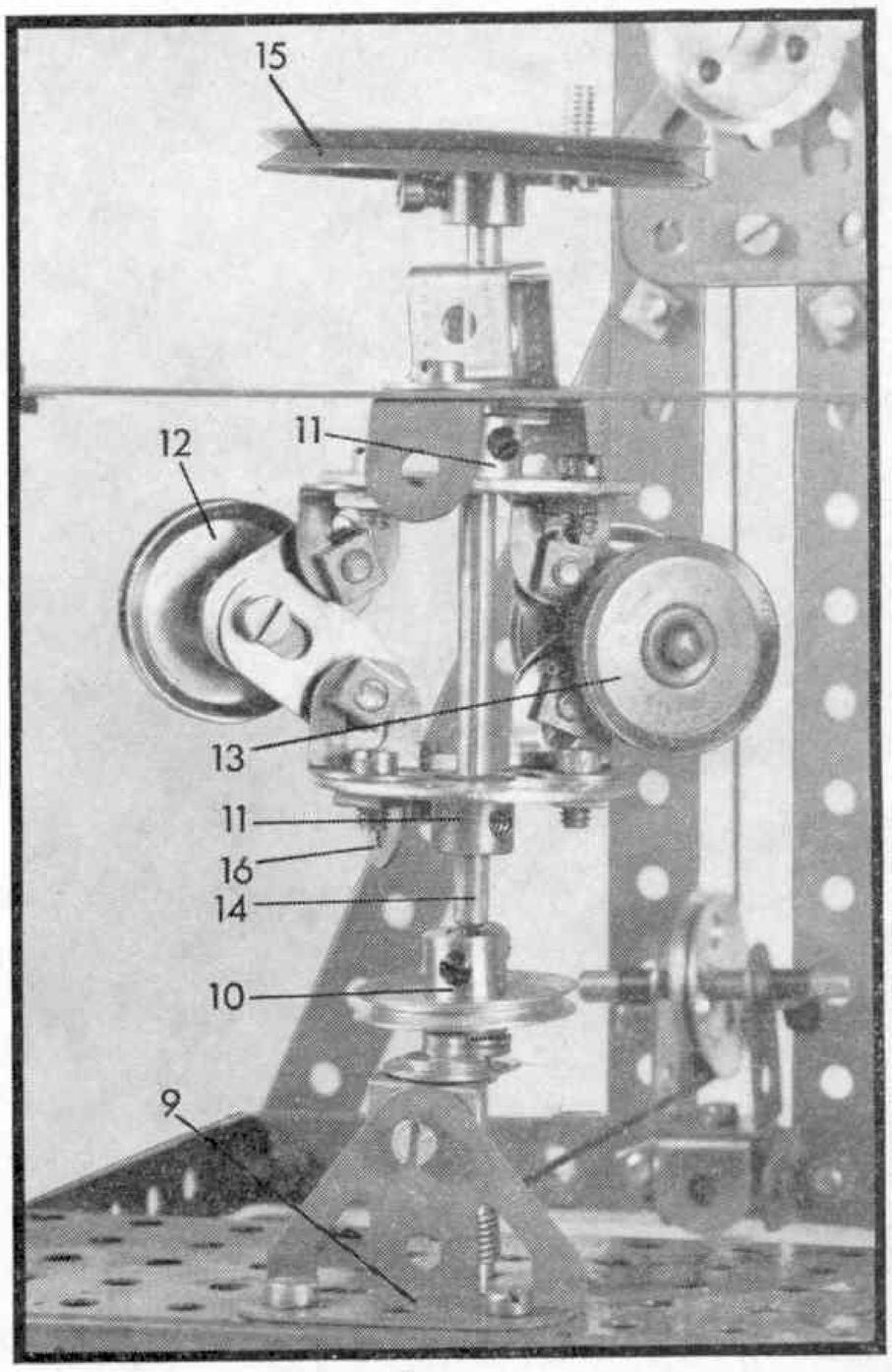
Quick Quiz

1. German. Peter Henlein, a Nuremberg clockmaker (1500).
2. 1,000.
3. Italy (Pisa).
4. Youth Hostel Association.
5. Curling.
6. 150 m.p.h. by the Vincent 'Black Lightning', made at Stevenage, Herts.

Crossword Puzzle No. 15



Heading photographs show, left: Meccano's use as a toy is illustrated by this See-Saw, built with the Playset. Right: a simple Band Saw also built with Meccano Playset, illustrating the use of Meccano as a miniature engineering system



Right: engineering principles applied to a toy. This Climbing Monkey model incorporates a centrifugal governor

Far right: a close-up view of the governor fitted to the Climbing Monkey model

3 times round

MANY readers have realised that there are advantages to be gained by using a flexible track system, and the plans published in recent issues of the magazine for flexible track layouts proved so popular that we have decided to publish yet another. One very convincing argument in favour of flexible track is the really large systems that can be built with the wide variety of pointwork available. The layout illustrated here is an example of such a layout, and is specially designed for the Wrenn range of points and flexible track.

The fact that we illustrate a layout of this kind does not, of course, mean that more compact layouts cannot be built using the same track system. It is simply pleasant to let our hair down occasionally and design something really complex showing just what a good track system can do given the appropriate time, funds and space.

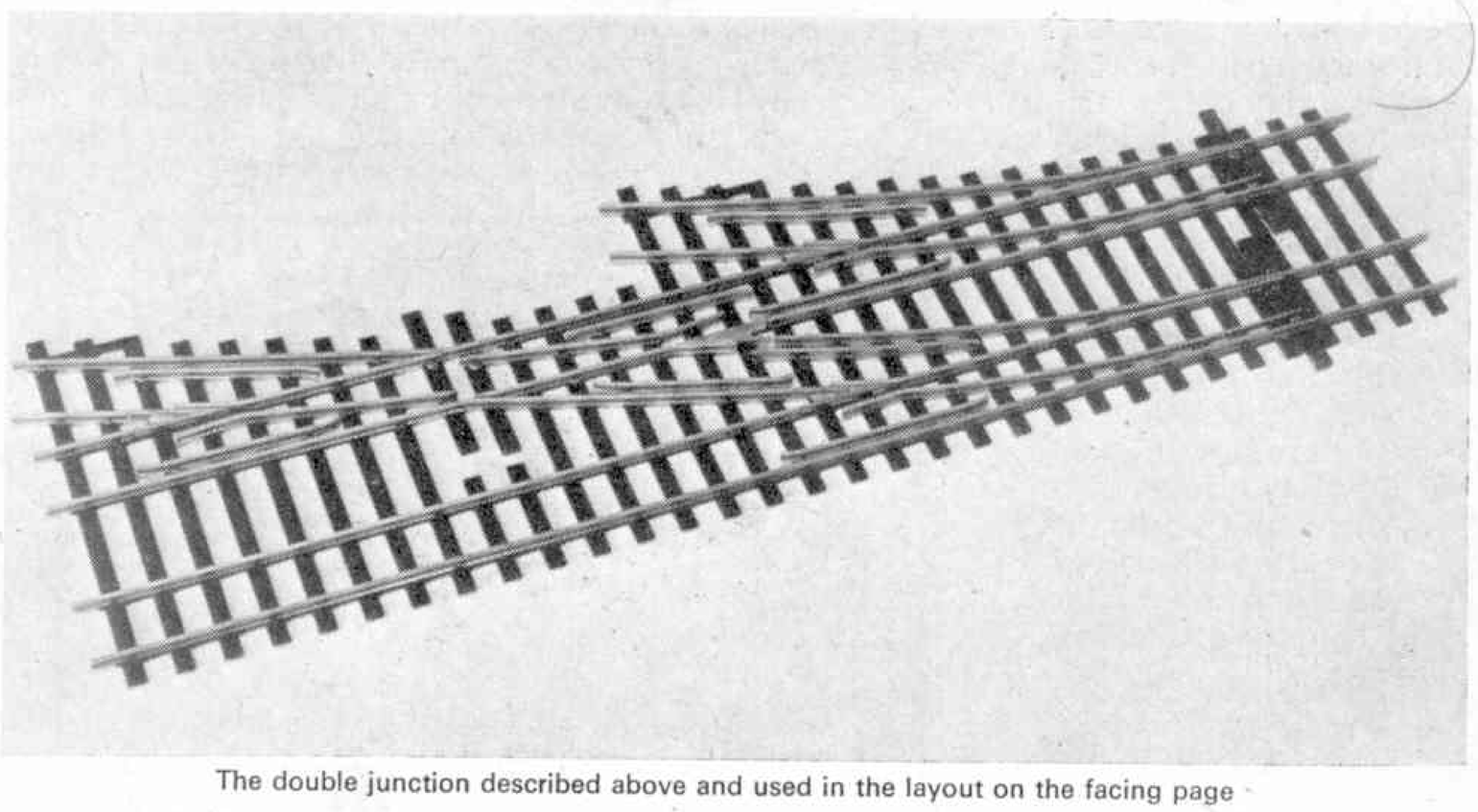
Basically the plan is a three-times-round design, although on the third circuit the train does travel through the same station twice. The layout is particularly suitable for a group of enthusiasts, where there is always likely to be more than one operator, and more important, a constant number of helpers. One person on his own could, of course, build the layout, but he must resign himself to the fact that it would no doubt take some years for the layout to be complete with even the basic essentials.

Wrenn flexible track is supplied in yard lengths, either two or three rail, nickel silver or galvanised steel, and is one of the few systems remaining which includes three-rail. A very comprehensive range of points is produced, including useful space-saving formations such as double junctions, scissors crossover, and ready-assembled crossovers. There is also a wide range of the more normal turnouts, all completely universal in operation, in 15 in., 24 in., and 36 in. radii. Two curved points, 24 in. from 36 in. and 14 in. from 32 in. both left- and right-hand, are useful items, and a 15° diamond crossing and 24 in. radius Y point complete the range.

All these formations have been used in the plan, including the double junctions which you can see forming a double crossover at the upper-level station at the top of the plan, and the scissors, which is positioned at the throat of the station in the middle of the layout. At least four other turnouts would be required to serve the same purpose as this formation, and the whole arrangement would need much more space, and might, in addition, result in the station becoming cramped and completely unworkable due to overcrowding. The scissors crossover is therefore a valuable formation in circumstances such as this. Wrenn curved points can also be found on the plan in the lower left-hand corner, on the lower-level track. No other points could have been used in this position without introducing a straight section on what is now a cleverly planned curve. Standard formations in the range have been used in all other positions, and the Y point can be seen in the station at the right of the plan.

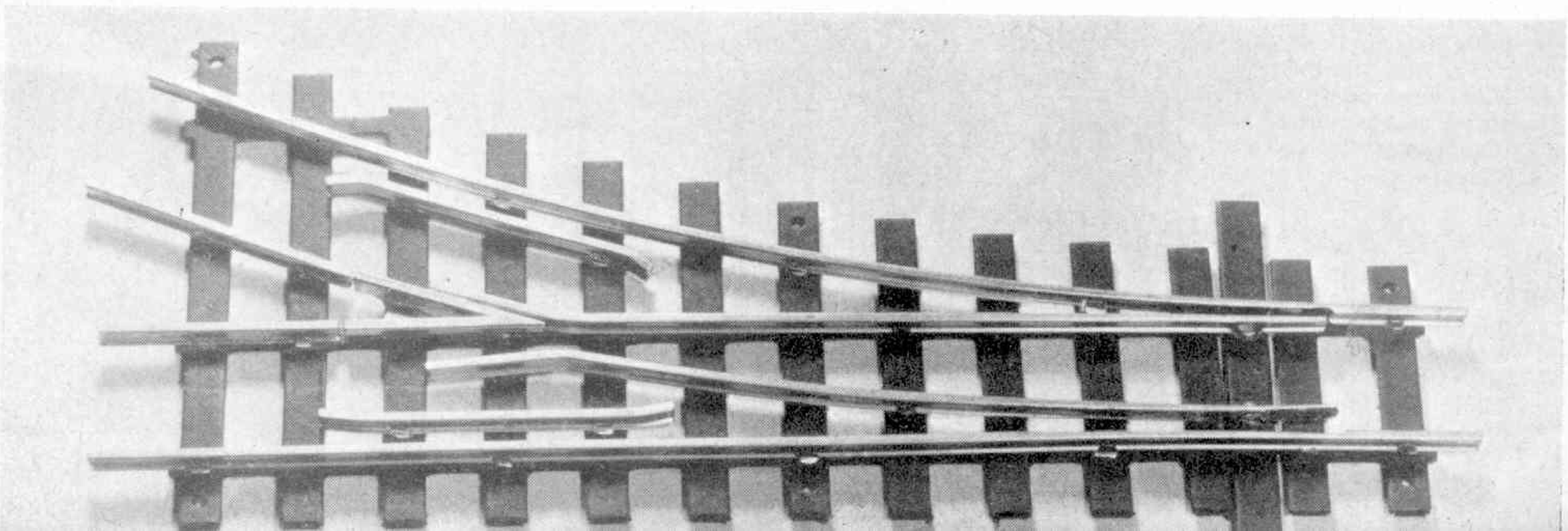
With no less than seven stations, one thing the layout does not lack is operational interest, and a number of operators would be needed to run any form of timetable. This is why a layout of this size and type is better built by a club where sufficient labour will be available for both building and operating. The only feature that one or two enthusiasts might find annoying is the rather small three road locomotive shed. Because of space limitations this could not really be any larger, and is simply intended as a garage shed, rather than a full locomotive depot which would require a much larger area for it to be modelled effectively. Scenery would be something of a challenge to the skill and imagination of the builder on this two-level layout, and the biggest problem would be in devising a way of creating a scenic 'break' between high- and low-level stations.

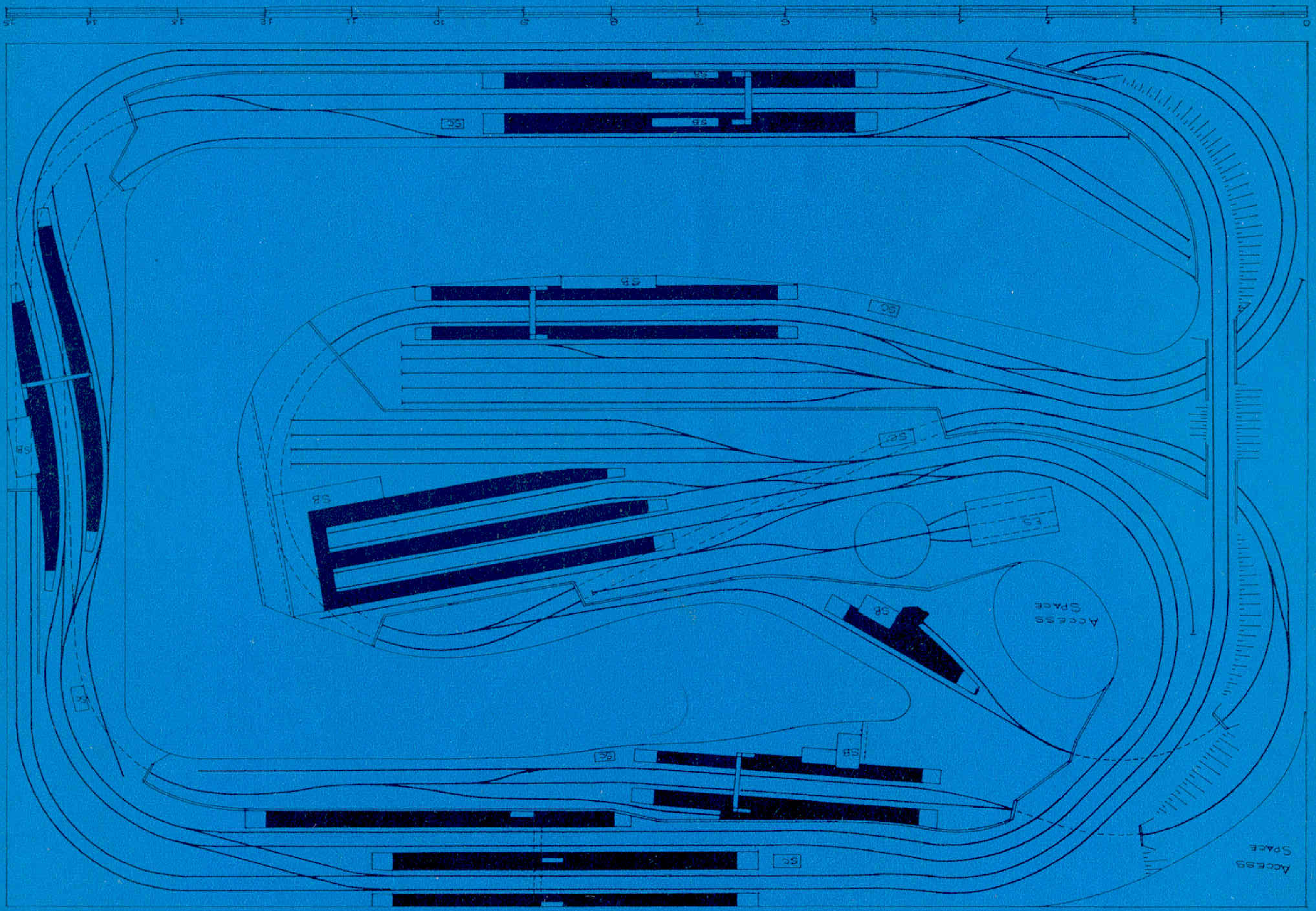
The layout would be more suitable for town scenery than rolling hills and countryside for which there is simply no space. Low relief buildings would be an invaluable aid for creating a town atmosphere, although it would of course be hopeless to try and model a complete town. Remember it is only necessary to give a suggestion to get the right effect. The difficulty in marrying the two levels together can be solved in certain situations by using retaining walls as shown on the drawing. It is a simple but effective way of dealing with the problem, although you may have your own pet ideas on the subject.



The double junction described above and used in the layout on the facing page

Below: A Wrenn universal turnout, available in a variety of radii




0
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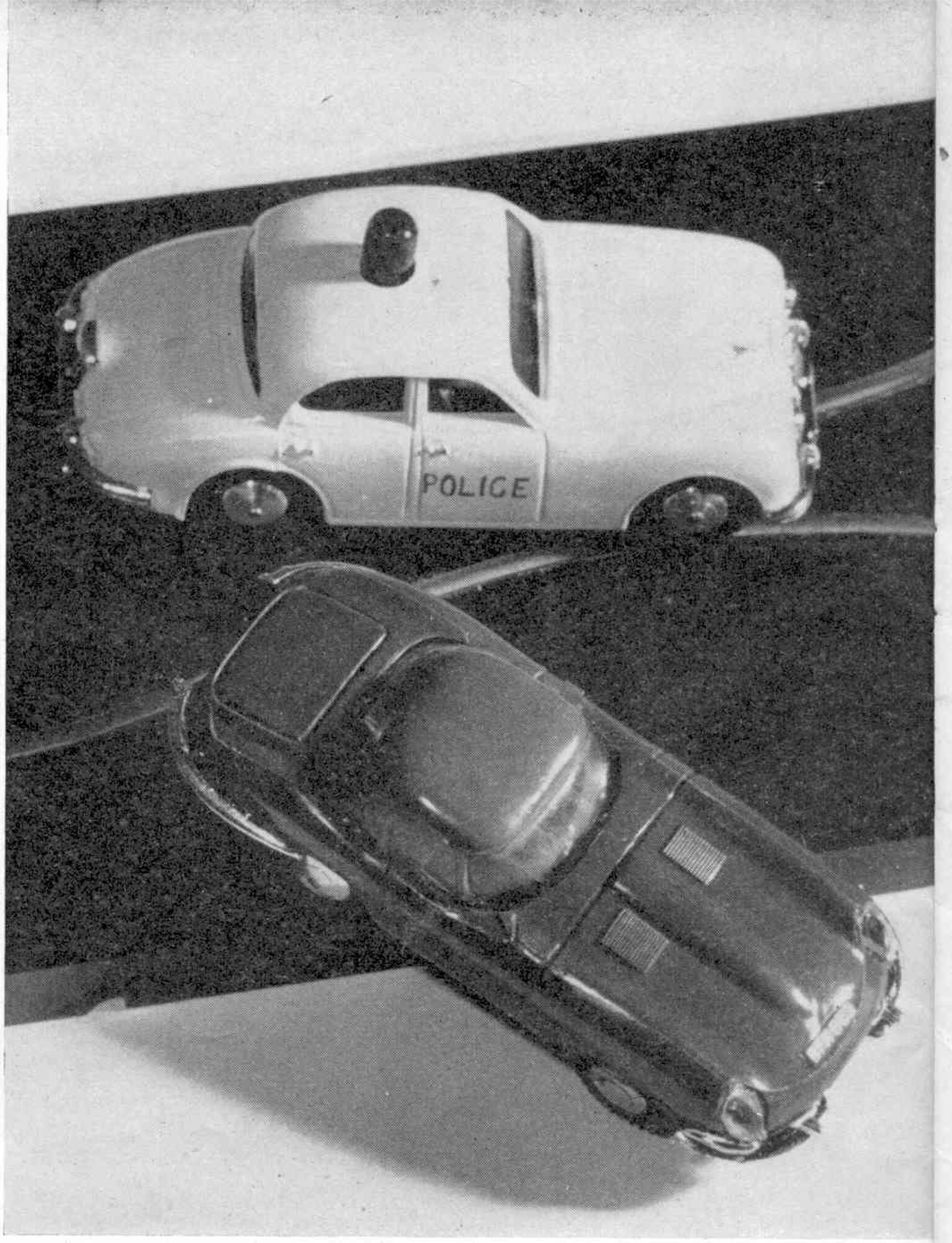
Access
Space

Table-top racing and rallying is now a real possibility with the beautiful little Minic system. The 'Crime Patrol' set featured in this article is terrific FUN!

MODEL MOTOR RALLYING

- on your tabletop



Above: much larger than life scene as the cop car nudges the baddie off the track at the chicane!

Handy and handsome is the Minic Police Jaguar with its flashing light and new Jet Speed motor. This picture is just about life size

If the construction of miniature landscapes and the racing of model cars are subjects that you find of interest, the hobby for you is undoubtedly that of model motor rallying. This, to my knowledge, is the only pastime where you can indulge in the pleasures of both these hobbies and where model cars can be raced in a realistic landscape, rather than on just bare track. This is only possible because of the small scale of the rally cars made by Minic, and which allows quite an interesting system to be built in a space small enough for even the most hard pressed of households.

Real motor rallying is a sport that is growing in popularity, indeed it is possible for private car owners to try their hand in the many local rallies now being held in many parts of the country. Model motor rallying can be just as satisfying and exciting as the larger model racing car systems; more so in fact since cars can be raced in scenery representing your own favourite rally circuit. Both model rallying and model racing make fascinating hobbies, although the larger model racing car systems do require a fair amount of space to allow a really interesting circuit

to be built. Model rally sets, however, are available to build circuits for areas as small as 2 ft. 6 in. by 2 ft. 1 in.

The new Minic catalogue now available, includes a number of such sets and also contains a most impressive range of GT racing and rally cars all costing from 17s. 6d. to 19s. 11d. and to the scale of approximately 1/65. What is really interesting, however, is the range of rally circuits that can be built from standard sets of which there are four, including 'Frontier Post', and 'Checkpoint Bravo'. One of the most unusual of the new sets is the 'Crime Patrol' set, one of the 'Motorway Adventure' series. Although not strictly for rallying, the set can be used in a similar way and includes two Jaguars, one a 3·4 litre saloon complete with blue light on the roof, and the other an E-type. It is specially designed to provide a lot of amusement, and is not simply an ordinary motorway or rally set. The idea is for the police car to leave the police station in pursuit of the E-type, and to catch and stop it on the chicane. Extra spice is added to the game, however, because the police car has to negotiate the hazard of a Y junction and also chase from a standing start. A lot of skill is therefore needed for the police car to outrun and stop the E-type on the chicane. It can be done by careful speed control on the curves and it is easier if the E-type is placed on the outside track.

Both excellent scale reproductions of the real cars, they are extremely light in weight—the E-type is only one ounce—and are moulded almost entirely in acetate. The E-type is a dark green colour, and the police car white. The chassis on both cars are moulded in tough 'Delriu', and have a new high power motor called the 'Jet Speed'. This is very similar to the motor fitted in the Tri-ang Hornby 'Rocket' locomotive, but has a different worm and worm wheel fitted to give greater speed. A rather impressive story about one of these motors is included in the Minic catalogue, concerning the testing of the motor before it was fitted to production models, when it ran in operation for a total of 624½ hours, Averaging 10 hours a day non-stop, the motor notched up the amazing total of 1,852 actual miles, as far, in fact, as from London to Athens!

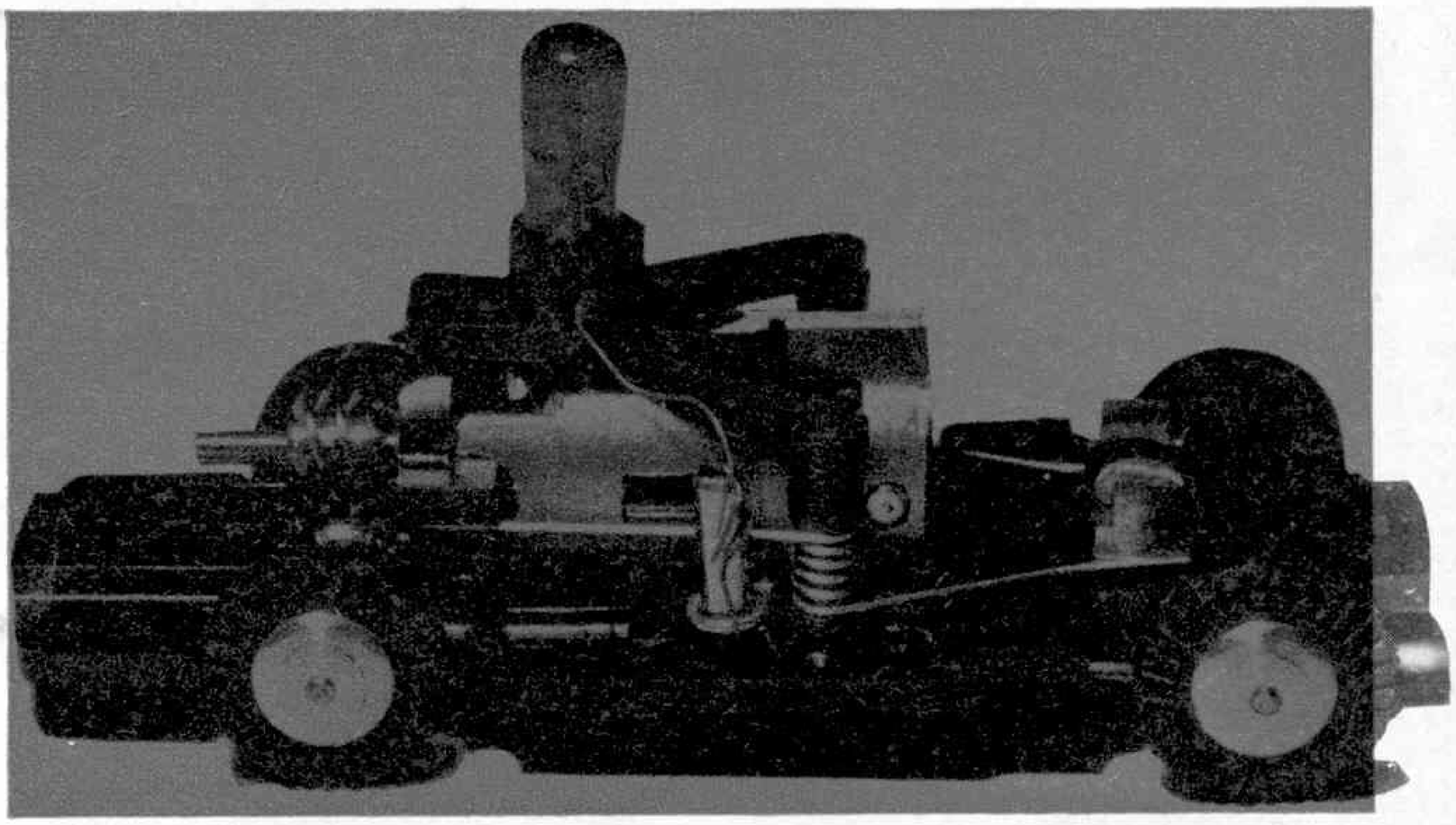
The 'Jet Speed' motor is only ½ in. long, 0·8 in. wide, and 0·55 in. deep, and is fitted with a three pole armature. Current is collected by two ingenious pick-up blades which rub on the sides of the slots in the track. These arms also project upwards into the chassis of the car and are held in position by two springs pivoted on either side of the chassis. These are extended backwards to serve the dual purpose of holding the motor brushes in position. The mechanism of the car is really surprisingly simple, and very robust. On either side of the pick-up blades under the car, are two pegs that locate in the track slots to guide the car while running. A similar peg is fitted at the rear for reversing.

The police Jaguar is a newcomer to the range in its white livery and is particularly appropriate for motorway layouts because the real thing can be seen on all Britain's motorways. The car is a modified version of the Jaguar 3·4 litre saloon (mark II) which costs £1,464. It is 15 ft. long and 5 ft. 6 in. wide, and is provided with a four speed gear box, although automatic transmission is an optional extra. The highly developed six cylinder engine, which has remained basically unchanged for almost two decades, is capable of producing a maximum speed of 105 m.p.h.

The 'Crime Patrol' set is supplied with sufficient track to build a circuit 2 ft. 6½ in. by 2 ft. 1¾ in. The components include a junction to provide access to the police station, and a chicane which is situated on the opposite side of the layout. With the track is a straight power pick-up section, which can be fitted to the same side as the chicane, although this is not essential. Three other straight tracks are included, one for the section adjacent to the junction, a half straight for the chicane side, and a standard straight for inside the police station.

The police station itself is supplied in simple kit form, and is moulded entirely in polystyrene. The 15 parts just clip together, and the track locates in position between the two base pieces. The entire kit can just as easily be dismantled should you so wish. The hand controllers supplied with the set and unique to Minic, have a forward/reverse control, and also a device for setting the speed of any car to any graduation on the speed control. Two speed and direction controllers are provided with the set, one black and the other red.

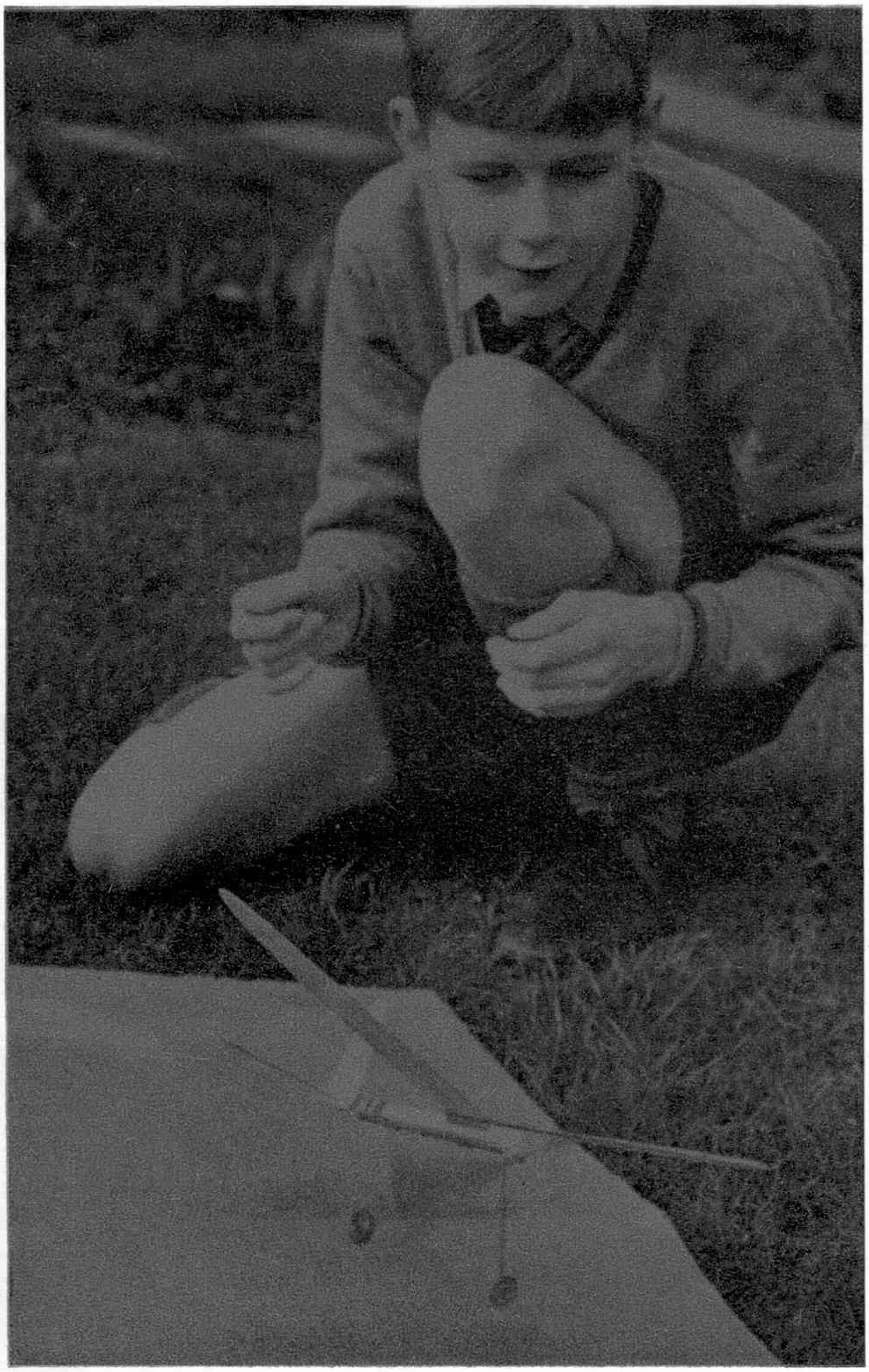
Even as supplied, the set will give many hours of amusement, but with just a few simple additions, can be made quite a lot more interesting. The greater the number of obstacles placed on the circuit the better are the chances of the police car in catching the Jaguar, providing, of course, that it is in the hands of a skilled driver. My suggestion would be to add a hazard track to the layout in the position occupied by the chicane, moving this to the straight track section on the same side. The spare straight can then be used to widen one end. A second straight will be needed for the opposite end to equal the geometry of the layout. This will make it necessary for the two cars to negotiate two curved sections and a hazard track before reaching the chicane and just that little extra care will be needed. The additions just described would increase the width to 3 ft. 0½ in., still completely within the scope of any table top layout.



THIS FLYING GAME

EVER since the day that man learnt to fly, there have been aeroplane competitions. Speed records to be broken—aerobatic prizes to be won. Long distance flights to be pioneered and events like the fictitious cross-channel race that kept us in fits of laughter in that hilarious film 'Those Magnificent Men in their Flying Machines'.

Model aircraft too, have their contests—right from local club level, up to big international events. The World Control Line Championships, for instance, attract hundreds of competitors, teams coming from as far afield as Russia and America, and incidentally, this year the event is to be held in Great Britain.



But like any other hobby or sport, you don't have to be of 'World Standard' to get just as much fun out of it as the experts. There's a big thrill to be had from flying *any* model aeroplane, but it's a lot more fun when you can get together with other enthusiasts and organise a competition.

Trouble is that at this point the whole scheme usually breaks down! The building of most flying models takes a lot of time, and a fair amount of skill—only gained with practice. Then there's the problem of suitable flying grounds—they are often hard to find—particularly in built-up areas.

Well, all these problems are really quite imaginary, or can be, if you take a closer look at some of the very fine ready-to-fly rubber powered models now available. These North Pacific jobs are good examples.

No cement

They are assembled in two or three minutes without any kind of adhesive being used; they can be flown in any park (get your tree-climbing gear ready). They are cheap to buy, and very tough. What's more we *guarantee* them to fly and fly very well. In fact they are ideal models with which to organise a first-class little contest with all your friends. Besides this, they will teach you quite a lot about the flight adjustment of flying models that will be useful when you graduate to bigger and more complicated models. There are five rubber-driven models in the range, the cheapest is the 12 inch span 'Astro Gnat' at 1s. 3d., and the most expensive the 'Trixie' costing 7s. 11d., with a 20 inch wing span and slightly more advanced design but of equally simple construction.

Perhaps the Sleek Streek (15 inch span 2s. 11d.) is the ideal medium-sized model with which to run a simple contest. 'Same-type' contests are great fun, because you all start off with an equal chance of winning, it's the skill of the flyer that counts and, of course, that little bit of luck too! The skill of the flyer is in his ability to get the very best possible performance from his machine by expert flight trimming and careful preparation. There are some 'dodges' too, that will help you to win—but before you start, draw up some rules. Every contest must have rules — the simpler the better — here are our suggestions.

Rules

1. Everyone shall use the same type of model.
2. The structure of the model must not be changed from the original design, but the rubber motor can be as big or small as the entrant desires.
3. If a smooth area is available, all models shall rise off ground (you only need about two feet of smooth runway for a model like 'Sleek Streek', so use some sheets of grocery box corrugated card, see photo left).
4. Models shall all be released at the same time at a signal from the contest director (this mass-launch technique makes an exciting contest and avoids the use of stop watches which are necessary

when models are flown individually). The last model to land (longest flight) scores three points, next to last two points and third model one point.

5. Each contest shall consist of five rounds (flights) and the contest winner is the entrant who scores the highest total number of points (add together the points scored in each round to decide the overall winner).

You will need a score card, which should be kept by someone appointed by the Contest Director (Dad?), and each model should be marked distinctively with a flight number, in order to simplify scoring identification. A fibre tip pen is useful for marking your model with its flight number. *Never* use dope or enamel, which will add a surprising amount of weight, and thus reduce the model's performance.

You should aim for a wide left-hand circle flight pattern. Too tight a circle will cut down the model's climb and thus reduce its flight duration.

More power

Adding an extra loop of rubber to the motor will give more power, but it will also *reduce* the number of turns that can be given before the motor breaks. The extra power will give a faster climb but the power will not last as long and the extra weight of the additional rubber will affect the glide. You can extend the life of a rubber motor by lubricating it with special rubber lubricant from your model shop—never use ordinary oil or grease as it rots the rubber. Castor oil is quite a good substitute rubber lubricant and you probably have some in the house, work it well into the rubber.

Faster winding

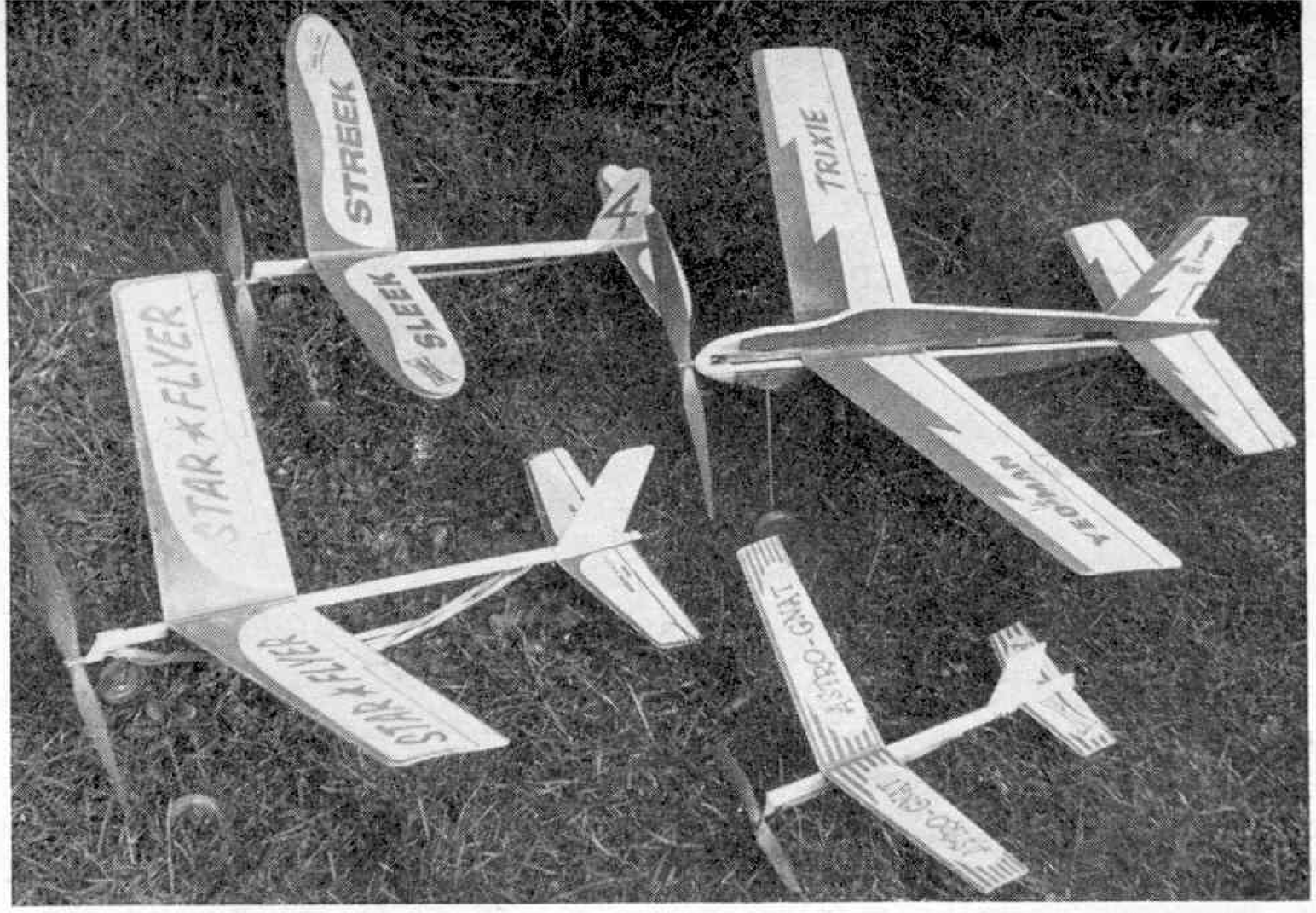
Winding the motor is simplified by using a geared winder or a small drill brace with a wire hook fitted in place of the drill.

You can increase the number of turns that the motor will safely take, by stretching it to two or three times its original length when winding it up. To do this you should get a helper to hold your model, unhook the rear end of the motor and, using the drill brace, wind the turns on from the back end. As the number of turns increases, come in slowly towards the model, arriving at the rear hook as the last turn is applied. An 'S' hook will simplify the transference of the motor from drill to rear hook. This technique can give you as much as 50 per cent safe increase in turns.

It is often useful with models like these, to experiment with *longer* rubber motors. Even if, when the turns are exhausted, the rubber hangs beneath the fuselage in a big loop it doesn't matter a great deal. A motor can be up to 25 per cent longer than the distance between the hooks, with a corresponding increase in turns — but the slight weight penalty must be taken into consideration.

Remember, too, that the wing position will need adjustment if motor sizes are altered, in order to compensate for the different centre of gravity (balance point).

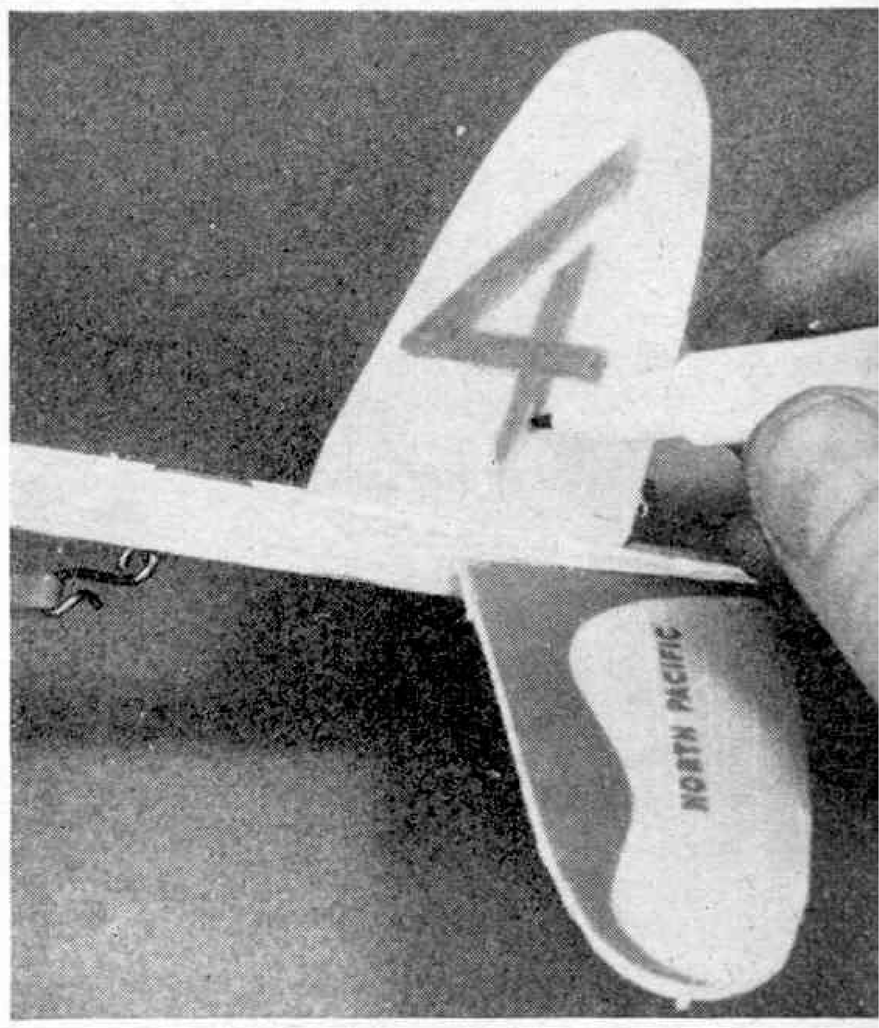
Finally—quite small wing position adjustments can make a big difference to flight duration. Generally this should be as far forward as possible without producing a stall (sharp climb followed by a dive). By the way—don't forget a little drop of oil on the propeller shaft—it *does* make a difference!



Score card

COMPETITOR	FLIGHT 1	FLIGHT 2	FLIGHT 3	FLIGHT 4	FLIGHT 5	TOTAL POINTS
Joe Soap						
Charlie Bloggs						
Fred Flan						
Bert Root						

SCORE: 1st—3 points; 2nd—2 points; 3rd—1 point



Photograph on the facing page shows Roger Davies with his Sleek Streek—just airborne and climbing fast! Above: four models that just clip together (the Astro-Gnat has no undercarriage). Right: marking the identification number on the rudder with a fibre tip pen. Below: an 'S' hook simplifies the re-attachment of a wound rubber motor

TOM SHERIDAN

Have you a problem—in science, history, literature or any other subject—to which you cannot find the answer? Ask Tom Sheridan and he will do his best to answer it. Questions should be sent on postcards bearing your full name and address, but these will not be published if you put them in brackets and just add your initials. Address them to Tom Sheridan, Meccano Magazine, Thomas Skinner and Co. (Publishers) Ltd., St. Alphage House, Fore Street, London, E.C.2.

A workman applies pigeon-repellent to the Houses of Parliament, with the help of a fire engine's 100 ft. ladder.

Infra-red

Q. How do infra-red rays enable us to see in the dark?—D.M., Harpenden, Herts.

A. Practically all light-sources contain invisible infra-red rays, the electromagnetic waves which are of longer wavelength than those of red light and which raise the temperature of any body absorbing them. They also have the power of penetrating fog or haze, which scatters ordinary light rays. So, photographs taken on plates made sensitive, by certain dyes, to infra-red radiation will show details which remain hidden on an ordinary plate and to the naked eye. An infra-red detector recently perfected in America is so sensitive that it can 'see' the heat from an electric frying-pan five miles away.

Radio pirates

Q. Whereabouts at sea are Radio London and Radio Caroline—John Ray, Ilford, Essex.

A. Radio London is in a ship off Frinton, near Clacton, on the Essex coast. Radio Caroline is off Felixstowe, on the East Suffolk coast.

Origami

Q. In the February issue a reader asked about Japanese paper-folding. Please explain what this is?—Terry Gallagher, Gedling, Notts.

A. Have you ever made a paper aeroplane? In Japan, the traditional art of origami has received as much attention as painting and sculpture. It is the art of folding and shaping paper into animal and human figures, flowers, helmets and other objects, and has lately attracted a new interest in this country. See *The Art of Origami*, by Samuel Randlett (Faber), and *Secrets of Origami Old and New*, by Robert Harbin (Oldbourne).

Moneyed men

Q. Who is the richest man in the world, and who was the richest ever?—'Poor Boy', Mauritius.

A. It is difficult to say with any certainty. The richest man in England, if not the world, is usually considered to be Paul Getty, with a fortune of £600 million. But the *Guiness Book of Records* says that the world's wealthiest man may be the Texan oil billionaire Haroldson Hunt, whose annual income is estimated at £18 million, of which more than a quarter is tax-free. Until he died in 1937, the richest man in the world was John Davison Rockefeller, the oil magnate who distributed some £150 million in founding various institutions. The Scottish steel magnate Andrew Carnegie, who during his lifetime gave away nearly £100 million, was reputed to be worth £350 million when he died in 1919.

Star journal

Q. Is there a magazine devoted to astronomy, suitable for a boy of 13?—John Stonehill, Pinner, Middlesex.

A. Not on general sale. But the Junior Astronomical Society, which caters specially for young enthusiasts, and meets regularly at Caxton Hall, Westminster, publishes a quarterly journal *Hermes,* which can also be bought by non-members. For enrolment details, write to: Miss P. Mence, 5 Saltash Close, St. Alban's Road, Sutton, Surrey.

Way of the wind

Q. What causes the wind, and what determines the direction in which it blows?—B. Hoskins, Crewkerne, Somerset.

A. Wind is caused mainly by differences in atmospheric pressure resulting from changes in temperature. When the pressure in one region falls, cold air from a high pressure region flows in to replace the warm air which has risen, and wind results. Since the air over high land cools more quickly than that over low areas, it tends to flow downwards from hills and mountains. As the earth is warmest near the equator, it is encircled by a belt of warm, rising air. Cooler air north and south of this belt, being at higher pressure, blows in to replace it; but because the earth is spinning, these winds blow from the northeast and southwest. They are the trade winds, so called because they were important to trade in sailing-ship days.

Pores in plenty

Q. How many pores are there in the human skin?—S. O'C., Preston, Lancs.

A. About two million. Every square-inch of skin contains about 500, on average, but the palms and soles of the feet have four times as many.

Bird-scarer

Q. What is the stuff that is being used to keep pigeons from perching on public buildings? — 'Curious', Forest Gate, London.

A. Several devices have been used, including spiky metal strips, ammonia sprays, electrified wires and recorded noises. The latest idea, adopted in West Berlin, is to feed the birds pills which make their eggs sterile and keep down their numbers. But many of London's buildings, like the British Museum and the National Gallery, have been protected by applying a jellylike plastic material which does not harm the pigeons but yields under their weight, making them feel insecure. It is extruded from a caulking-gun on to the ledges and stonework where they roost, and is unaffected by weather. The picture shows part of the Houses of Parliament being treated, with the help of a fire engine's 100 ft. turntable ladder.

by Spanner

STEER A TRUE COURSE

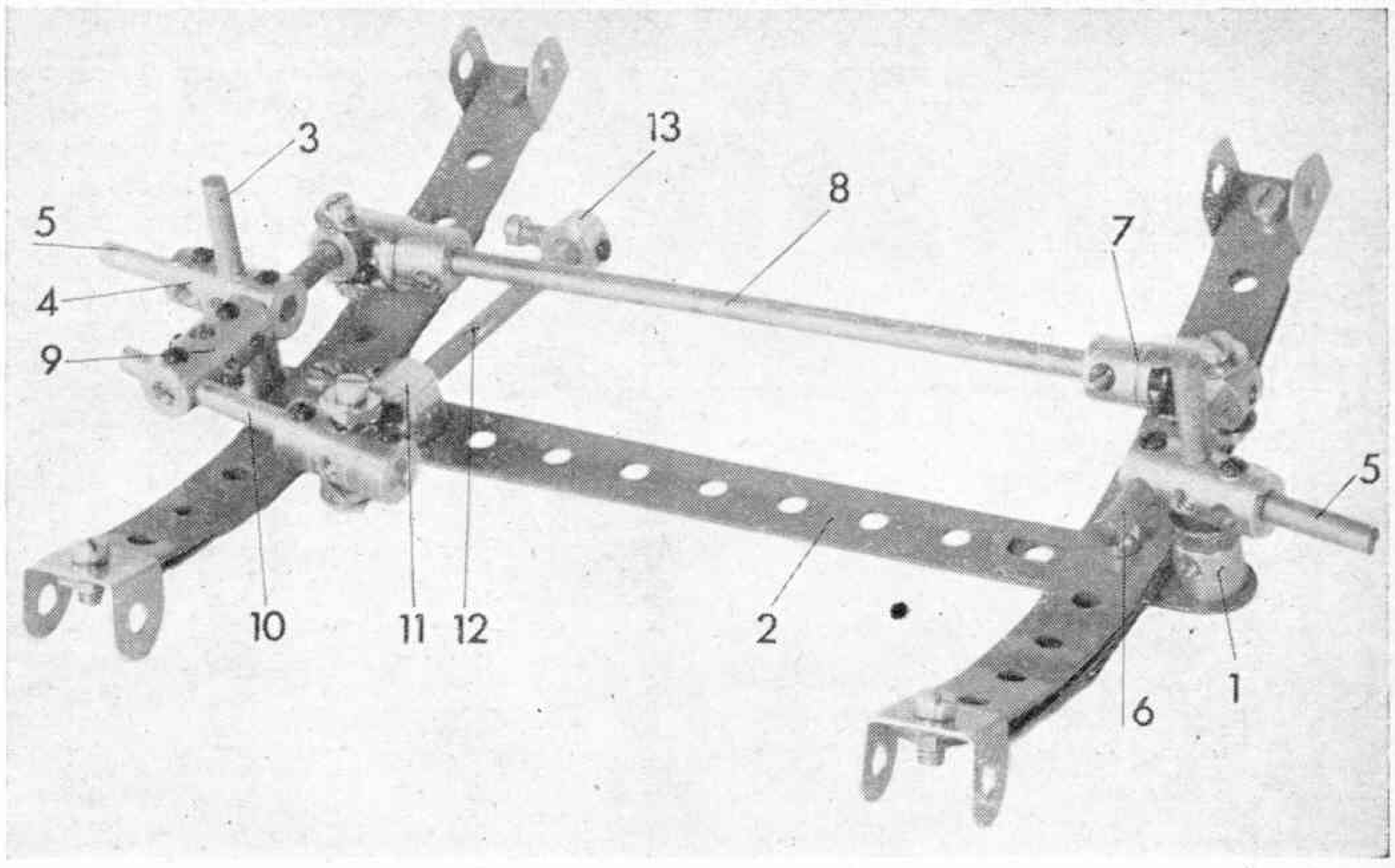
STEERING on motor vehicles is something we all take for granted, as is proved by almost every driver on the road today. Intent on travelling from one place to another, he turns the steering wheel of his car, guiding it around all the bends encountered on his journey, without giving a single thought to the complicated system of linkages which cause the front wheels to change direction as he wishes, thus enabling the car to be steered round the bends.

When a car is travelling in a straight line the front wheels are parallel, but when it alters course, the inside front wheel must be inclined at a greater angle than the corresponding outer wheel, because it has to turn in a smaller circle. The linkage system which results in this correct form of steering is given the name 'Ackermann' after the coach-builders who first made practical use of it many years ago, and a Meccano version of Ackermann steering is the subject of this article. In case the mechanism looks familiar to some readers I must explain that it was first produced in Meccano and featured in M.M. some considerable time before the last war. It's such a useful arrangement, however, that I thought it well worth including this month. In the particular example illustrated, two simple leaf springs are built up from Strips of various lengths. A Crank 1 is bolted to each spring, at the same time fixing a $5\frac{1}{2}$ in. Strip 2 between the springs as shown. A $1\frac{1}{2}$ in. Rod 3 is mounted in the boss of each Crank to serve as the vertical swivel pin, upon which three Washers and a Coupling 4 are loosely mounted. The stub axle, a 1 in. Rod 5, is secured in the longitudinal bore of the Coupling, which, incidentally, is held in place by a Collar (not shown in the illustration). Rod 5 carries the road wheels of the model to which the mechanism is fitted.

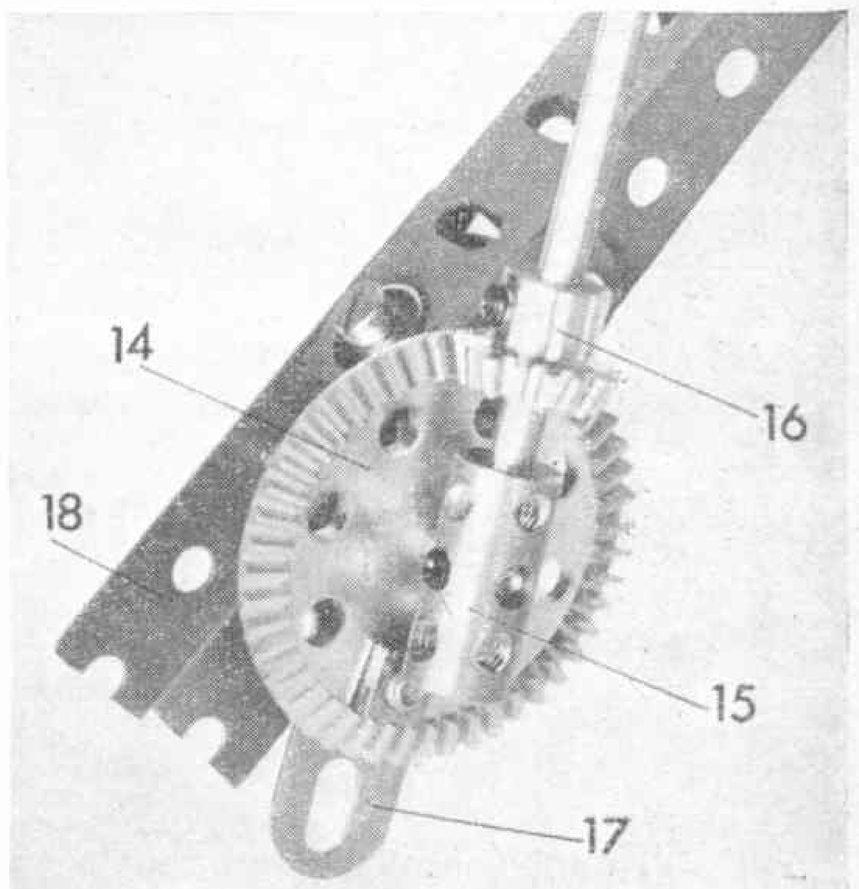
Fixed in the inside transverse smooth bore of each Coupling is another $1\frac{1}{2}$ in. Rod 6, carrying a Swivel Bearing 7. These Swivel Bearings are, in turn, connected by a 5 in. Rod 8 serving as the track rod. A second Coupling 9, carrying a 2 in. Rod 10, is mounted on the other end of right-hand Rod 6. Rod 10, in turn, carries a Swivel Bearing 11, the 'spider' of which is free to turn between two Collars. Fixed in the boss of the Swivel Bearing is a $2\frac{1}{2}$ in. Rod 12 on the other end of which a Collar 13 is secured.

Turning now to the steering column reduction gearing, a $1\frac{1}{2}$ in. Rod carrying a $1\frac{1}{2}$ in. Bevel Gear 14 is mounted in the right-hand chassis member, being held in place by a Collar. Also mounted on the Rod is a Coupling 15 in the longitudinal bore of which the steering column is mounted. A $\frac{1}{2}$ in. Bevel Gear 16, fixed on the steering column, engages with Bevel Gear 14. Finally, a Fishplate 17 is bolted to Bevel Gear 14 and is then attached to Collar 13 by a Bolt.

When the steering gear is completed, the leaf springs are bolted to the chassis members of the model. At this point I should mention that the chassis members I used were each built up from two $12\frac{1}{2}$ in. Angle Girders extended by two $5\frac{1}{2}$ in. Curved Strips 18, but you could use differently-designed examples.

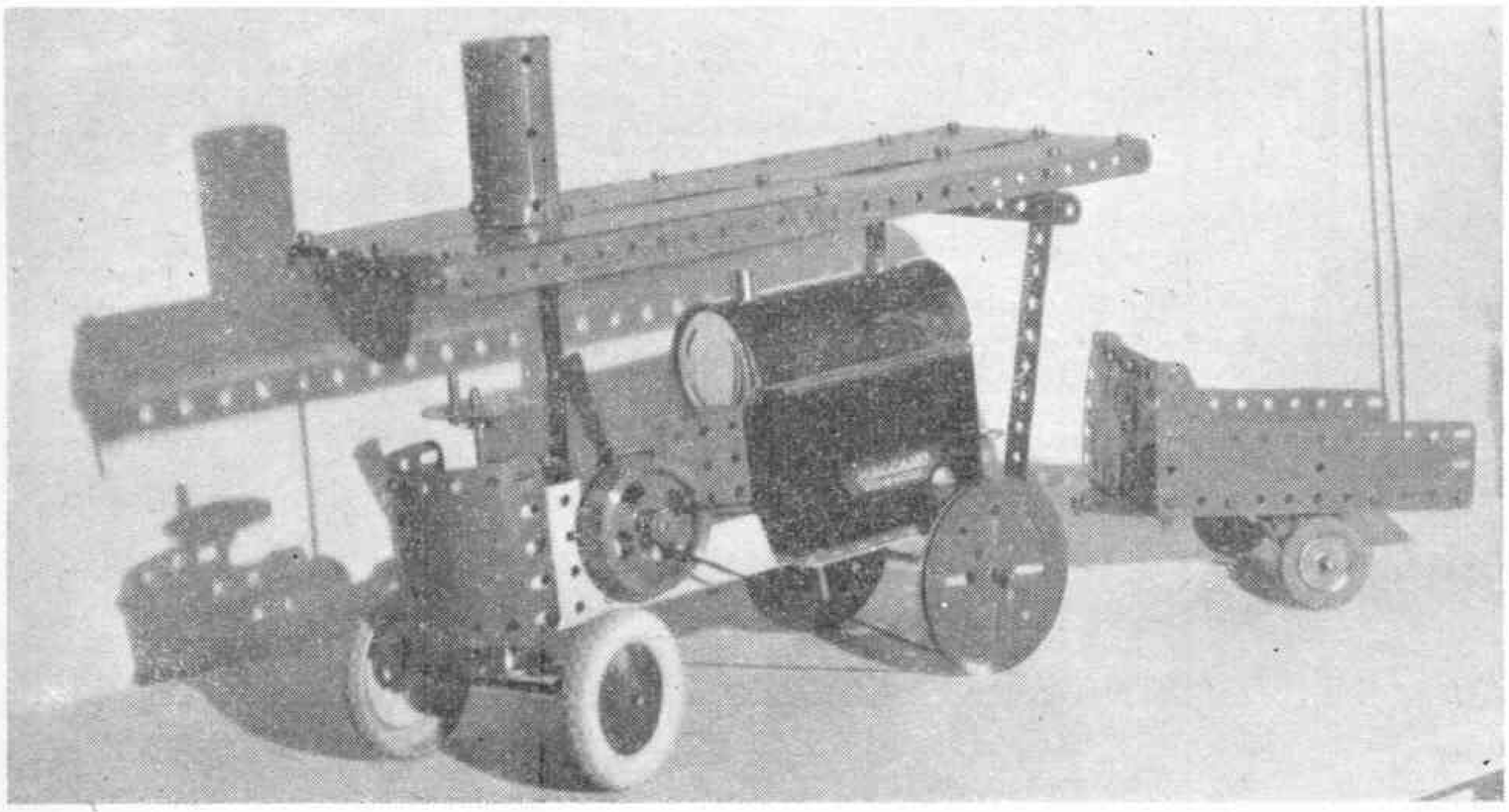


An Ackermann steering arrangement built entirely of Meccano Parts. This is a reproduction of the true steering gear fitted to real-life vehicles



The steering column reduction gearing mounted on one of the chassis members. In this illustration the $5\frac{1}{2}$ in. Curved Strips 18 have been shortened to help in description

13 year-old Douglas Campell of Toronto, Ontario, Canada, sent us this photograph of his traction engine and the trailer, which he built with a No. 6 outfit. It uses a Meccano steam engine and is fitted with working steering gear



The above building instructions refer to the particular mechanism illustrated on this page. The mechanisms can, of course, be modified to fit any suitable model and, in fact, the chances are that the leaf spring and chassis mountings I used would not be suitable for inclusion in a model you were building. Consequently, there is no point in me listing all the parts used in the actual arrangement illustrated, simply because you might well require different parts. Except, perhaps, for the track rod, however, the basic linkages would still be incorporated, therefore, the following is a list of all the Rods and Couplings, etc., used in the illustrated example :

Parts required

1 of No. 10	2 of No. 18b	6 of No. 59
1 of No. 15	1 of No. 30a	2 of No. 62
1 of No. 16a	1 of No. 30c	3 of No. 63
1 of No. 17	2 of No. 37a	4 of No. 165
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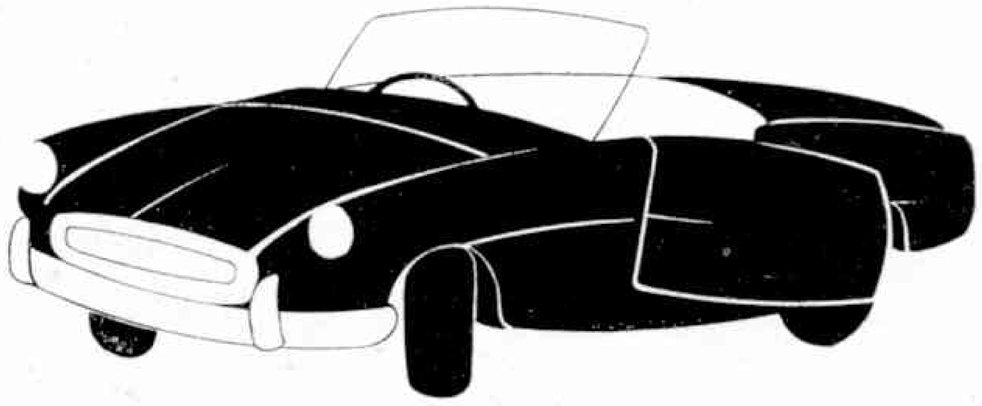

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LAST MONTH'S DINKY TOY WINNERS

BELOW is a list of fifty names of readers whose entries for last month's 'Silhouette' competition were the first correct answers to be selected by the Editor. If your name appears in this list, then write on a postcard to: *Silhouette Prize, Meccano Magazine, Thomas Skinner & Co. Ltd., St. Alphage House, Fore Street, London, E.C.2*, and claim your FREE Dinky Model Copco Lorry. If your name does not appear in this list, even though you entered for the competition, don't be disappointed—try again!

Michael Bolam, Pickhurst Rise, West Wickham, Kent. *S. Bomford,* Chambria Close, Appleford, Nr. Abingdon, Berks. *Keith Booker,* Hill Top Close, Loughton, Essex. *John Bowyer,* Cherry Way, Upper Halliford Road, Shepperton, Middx. *David Clements,* Plantation Way, Amersham, Bucks. *Richard Cooper,* Holyoake Road, Mapperley, Nottingham. *L. D. Cotterill,* Balfour Road, Preston, Lancs. *D. L. Curson,* Heslop Road, Balham, London, S.W.12. *A. Davis,* Budshead Road, Whitleigh, Plymouth, Devon. *J. H. Devonald,* Barnfield Road, West Bollington, Nr. Macclesfield, Cheshire. *J. Dunford,* Gore Road, New Milton, Hants. *Stuart Farquhar,* Shrub End Road, Colchester, Essex. *C. Galpin,* Llywn-y-pia Road, Lisuane, Cardiff, Wales. *I. Gordon Gibson,* Byron Avenue, Coulsdon, Surrey. *P. Griffiths,* Taylors Lane, Sydenham, London, S.E.26. *Graham Haffenden,* Withypitts, Turners Hill, Crawley, Sussex. *Gary Hames,* Moorland Avenue, Barton-on-Sea, Hants. *Nigel Hayward,* College Road, Oswestry, Shropshire. *G. Henwood,* The Square, Brightwell, Nr. Wallingford, Berks. *N. E. Horsley,* Southmere Oval, Moore Avenue, Great Horton, Bradford 7, Yorks. *G. Hyde,* Denby Street, Bradford 8, Yorks. *T. J. Irving,* Boston Avenue, Benton, Newcastle upon Tyne 7. *I. Lander,* Wood Street, Wood End, Atherstone, Warks. *Michael John Lishman,* Havelock Road, Windermere, Westmorland. *M. Long,* The Hillway, Portchester, Hants. *A. Marks,* Oakwood Drive, Heaton, Bolton, Lancs. *Howard J. Mayson,* Middleton Avenue, Ilkley, Yorks. *R. Meredith,* Beach Avenue, Barton-on-Sea, New Milton, Hants. *Andrew K. Miles,* Pearsall Road, Longwell Green, Nr. Bristol. *Robert Packham,* Brookway, Finches Park, Londfeld, Sussex. *John Parsons,* Hall Lane, Upminster, Essex. *C. Pastori,* Crespigny Road, Hendon Central, London, N.W.4. *J. M. Patterson,* Wood Lane, Neston, Wirral, Cheshire. *Philip Pratt,* Parsonage Drive, Rednal, Birmingham. *A. Raby,* Newbold Avenue, Chesterfield. *I. Shaw,* Cabra Park, Phibsboro, Dublin 7, Eire. *R. Sheppard,* Callington Road, Brislington, Bristol 4. *P. Spiegelhalter,* Brookside South, East Barnet, Barnet, Herts. *W. Spooner,* Park Road, Hounslow, Middx. *M. Stamp,* Castlemans, Farm Cottages, Knowl Hill, Twyford, Berks. *Marlin Tickner,* The Crest, Cripplegate Lane, Southwater, Horsham, Sussex. *P. Usher,* Bricknell Avenue, Hull, Yorks. *William Walker,* Green Street, Sunbury on Thames, Middx. *Mark Webster,* Spring Grove, Loughton, Essex. *Roger Williams,* Stowe Street, Lichfield, Staffs.

Overseas Winners Competition 'J'
(Airport Fire Tender)

Robert Theisen, rue Marechal Fach, Virton (Province de Luxembourg), Belgique. *T. A. Cheesman,* Mason Avenue, Regina, Saskatchewan, Canada. *Robert Stuart,* Delongpre Avenue, Hollywood 28, California, U.S.A. *F. Gerin,* rue des Chalets, 72 Le Mans, France. *Charlie Buckerfield,* West Avon Circle, Rochester, Michigan, U.S.A.

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• Collector selling some stamps. Selections from Shade, 39 St. Leonard's Road, Lowestoft.

• M.M.'s, 1955-61 inclusive, and 2 dozen odd; excellent condition. £2 10s. 0d., including postage. Also "Railway Modellers", September 1962-August 1965 inclusive, £1 15s. 0d., including postage. D. Seffery, 7 Horsley Terrace, Walker, Newcastle upon Tyne, 6.

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• New! Unused! Dublo 3 rail tanks, 2-6-4, £2; 0-6-2, £1; coaches 5s.; curves 6d. 37 Langley Park, London, N.W.7. MIL 3519.

• Toys; books; Hornby Dublo 2 rail stock; Airfix soldiers; and Meccano Magazines; s.a.e. for list. Vick, 13 Badshot Lea Road, Farnham, Surrey.

• Meccano 10, red/green, complete, £14. 25 Burnbreck Gardens, Wollaton, Nottingham. Tel. 283676.

• Meccano Magazines, 1946 to 1950, bound, 10s. year; 1951 to 1953, unbound, 7s. 6d. per year. Shearman, 33 Massey Street, St. George's Road, Hull, Yorks.

• Hornby 00 3 rail: 150 ft. track, 12 points, 12 locos, 50 rolling stock, three stations, three transformers, two T.P.O. sets, turntable, level crossing, girder bridge, three signals, signal box, footbridge, box ass., 15 Matchbox series; price £60 o.n.o. R. Ottoway, 2 Mayfield Terrace, Cowgate, Newcastle upon Tyne.

• Very large Meccano set, includes four electric motors, cost £80 to £85, sell for £40 o.n.o. P. Gascoine, 37 Garden Road, Walton-on-Thames, Surrey.

• 89 "Aeromodellers", Model Aircraft", 1951-1964, 50s.: Meccano Magazines, 1960-1963, complete, 1964 less five, 40s.; Merit Microscope, 35s.; Frog 80 diesel, 20s.: O & R 1·5 c.c. glow, 30s.; Meccano No. 7 outfit (red/green), £4: Brownie 127, 10s. 14 Amersham Hill Gardens, High Wycombe, Bucks.

• Minic Motorway (no vehicles) and accessories, all in good condition, for list of articles: Alan Clark, 42 Motherwell Road, Bellshill

• Learn Yoga. Send 30s. to P. C. Aswani (A19), A8 Narnarayan Society, Turner Road, Bandra, Bombay 50, India.

• Prewar Dinkies, including number 48, obsolete yesteryears. Metal soldiers, standard and Dinky scale. S.a.e. 42 London Road, Stanmore, Middx.

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WANTS

• Attractive girl pen friend, aged 16½-17 years. Write, with photograph, to: P. Gascoine, 37 Garden Road, Walton-on-Thames, Surrey.

• Cheap diesel engine wanted, in good order, 1 c.c. or under. Write to R. Schuck, 23 Litchfield Way, London, N.W.11.

• Geared roller bearing, complete; state price and condition. P Berry, 42 Broom Ave., Manchester 19.

• Prewar Hornby "K" type No. 2 copper oil can; good price for one in good condition. C. Spence, 40 Charlotte Street, Edinburgh 6.

• Obsolete Dinky Toys, etc., highest prices single or collections. D. Pinnock, 1a Hereford Road, Southsea, Hants.

• Large R/G Meccano outfit wanted; Canadian correspondents only. Williams, 705 Spadina Ave., Toronto, Ontario, Canada.

• Prewar Meccano literature—Magazines (bound or loose), manuals, price lists, catalogues, etc. Also obsolete parts. Hearn, 50 Blundell Avenue, Horley, Surrey. Horley 4897.

• Urgent, odd Meccano Magazines, 1964-1966. David Allen, 1 Chaucer Grove, Leigh, Lancashire.

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STAMPS NEWS

BY F. E. METCALFE

QUICKWORK

Quick work, and worthwhile work, too. That is how I would describe the efforts of the Indian Post Office in providing a very suitable stamp, to mark the respect which they, nay indeed all the world held for their late leader, Shri Lalbahadur Shastri. Many will remember when, in 1939, there were suggestions that our own P.O. should issue a set of stamps to mark the centenary, due May the following year, of the world's first postage stamps. A number of countries were planning such issues. But when months before the event was to take place, a question was asked in the House of Commons on the subject, and our P.O. lamely replied that there wasn't time to prepare the stamps. After all they had not had quite a hundred years to think about it, for there were about nine months still to go, to complete the century. Anyhow, we got a set in the end; perhaps the dullest and most boring issue ever produced. And the contrast. In a matter of days almost, India paid homage to her late Prime Minister by producing a stamp, copies of which have gone all over the world. Well done, India.

YES IT IS

No, it can't be, but the kite shaped object is a stamp. At least that is what it is intended to be, and it will pay postal charges, though it has got to be admitted, that the Sierra Leone Postal Administration certainly had other uses in mind, when along with other items (one of which was illustrated a month or two ago) it was issued, with at least one eye, on the possibilities of sales to collectors. Quite frankly, as an old collector, I hardly know what to think about these gimmick issues. In fairness to those who release them, they never as much as even suggest that anyone should buy. Yet they know all right, what collectors are, how attractive stamps appeal to them, and if the stamps are likely to be scarce, that appeal increases. But what can be said is that the collecting of such items seems to pale in time, and it is certainly not philately, and I'll leave it at that for the moment. Give me the issues of a country like India every time.

CANADIAN FLOWERS

The stamps of Canada are good for my pocket money, too. Soon this popular philatelic country will have completed the set of stamps, June 30th, unless there is a last minute alteration, which began to be issued, one at a time, building up to commemorate the 100th anniversary of the Confederation. The idea was to issue a single stamp (Canada does not believe in trying to empty collectors' pockets) each one depicting the state flower emblem of each province or territory. The series started with the 'Maple Leaf' design, and bit by bit the stamps with the floral designs were issued, until the end comes with the final stamp to complete it all, depicting the Canadian Coat of Arms. And the net result is a most beautiful set, which will grace any collection. But, there is one snag. The gum used on Canadian stamps never seems to set quite dry, and even if the greatest care is taken, stamps often stick to album pages. It's not long since I saw a young collector almost in tears because his mint Canadian stamps (they were not mint any longer) had mostly stuck to the leaves in his album. As for dealers having to send mint Canadian stamps abroad, they simply dread the results.

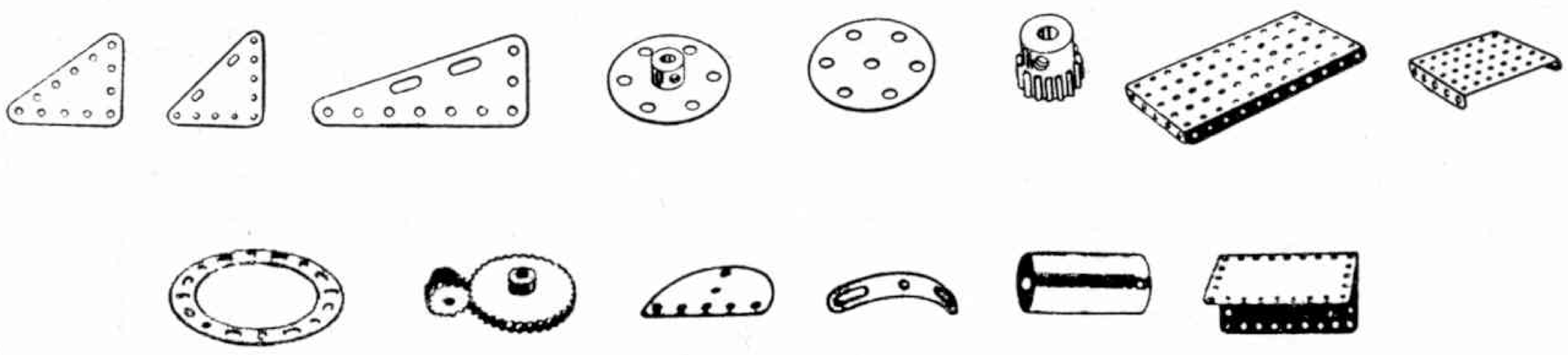
NEW ZEALAND

The stamps of this country are another favourite of mine, and I am far from being on my own in the preference, for very many share my taste. And no wonder, because not only are New Zealand stamps attractive, but equally important in these days, when so many countries are adopting stamps as an easy method of gathering soft revenue, they, the N.Z. Post Office, play fair with collectors, and there are always plenty of stamps for everybody. It might be thought, of course, that all would want to sell as many stamps as possible. But one has only to see how few of certain values some P.O.'s release, to see that there are more ways of making money than one. Anyhow, those who have already the attractive current set, should not overlook a new value which was issued March 16th. It is of 7d. face value and depicts the flower of the Koromiko shrub. Don't overlook also that the whole set will be changed next year, when New Zealand adopts the decimal currency.

THE TIP OF THE MONTH

I am not too sure that the new definitive set for Gambia, which was issued February 18th, will prove a good investment or not, though if you buy whilst current at normal price, you cannot go far wrong. But my tip to buy is based solely on the grounds of the stamps being so beautifully designed, as well as wonderfully printed. They're real beauties. Each value shows a Gambian bird in full colour, and as well as that, the backgrounds depict the foliage which is the natural habitat of these winged beauties. Just imagine, if flying about in Great Britain were birds like these. Never mind, if about all we city dwellers see in our gardens are sparrows and starlings, we can still buy a set of the new Gambia issue and enjoy what we see in the stamps. The set goes up to £1, but do not let that put you off, for even the ½d. value shows a beautiful bird, whereas a set up to 1s. of eight stamps gives you a real gallery, and that is surely not beyond our pockets. And here I would like to say a word about the printing of the stamps. It is really tops!

Peculiar shapes appeal to some collectors and the new Sierra Leone issue will, no doubt, find willing buyers, but 'Stamps News' thinks their appeal will be of short duration



Dealers who specialise in Meccano spare parts

Listed below are some of the dealers who sell Meccano accessories and spare parts. This is intended to aid enthusiasts—and there are many of them—who constantly require additional spare parts for their Sets. All dealers can, of course, order Meccano spare parts for their customers, but those listed here are among our spare part specialists.

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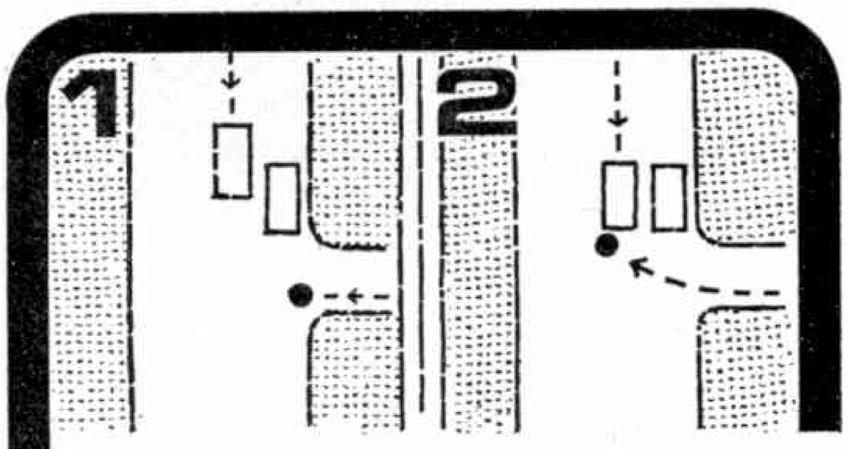

1 When entering a main road always be particularly careful if you see a stationary vehicle near the corner. Make sure it is not just about to move off and remember that there might be another vehicle coming up on the 'blind' side.

2 If another vehicle *is* coming you may find it difficult to pull back quickly if you are riding. The answer—walk your bicycle into the road to look round the front of the stationary vehicle, not forgetting also to watch for traffic on your left.

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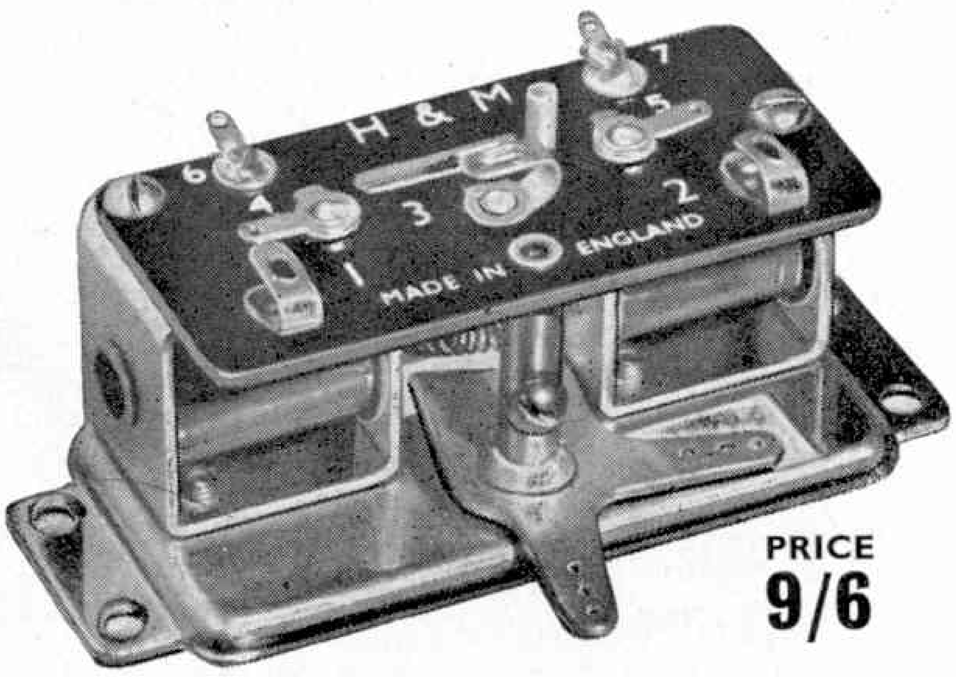

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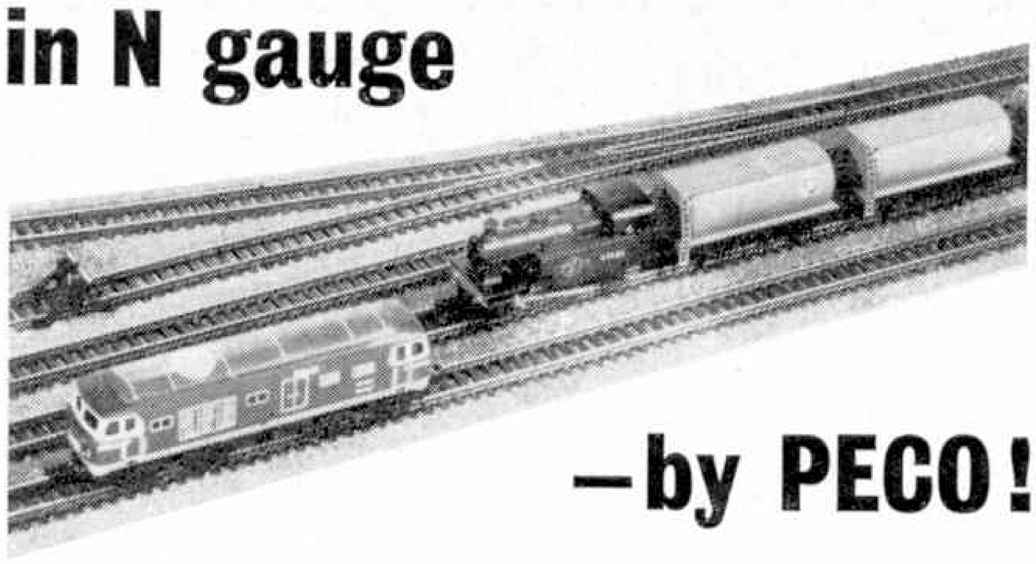

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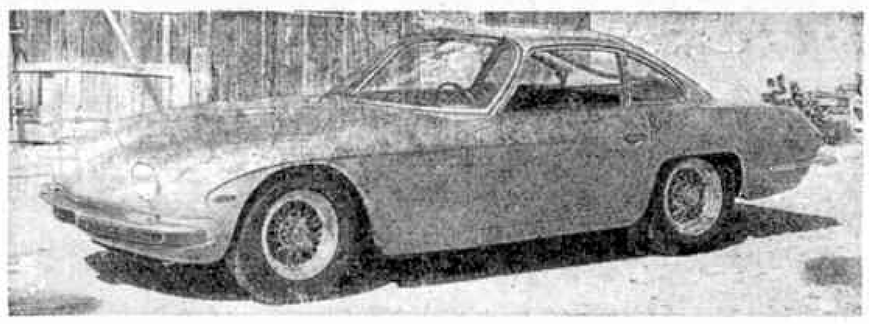

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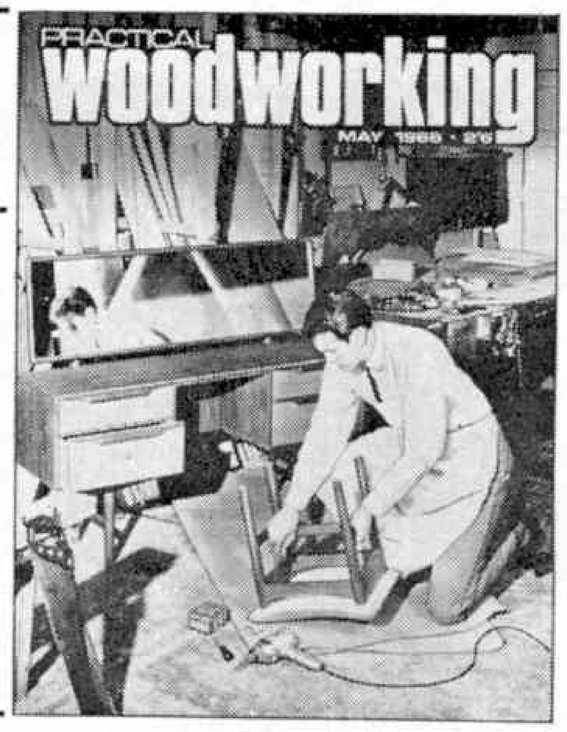

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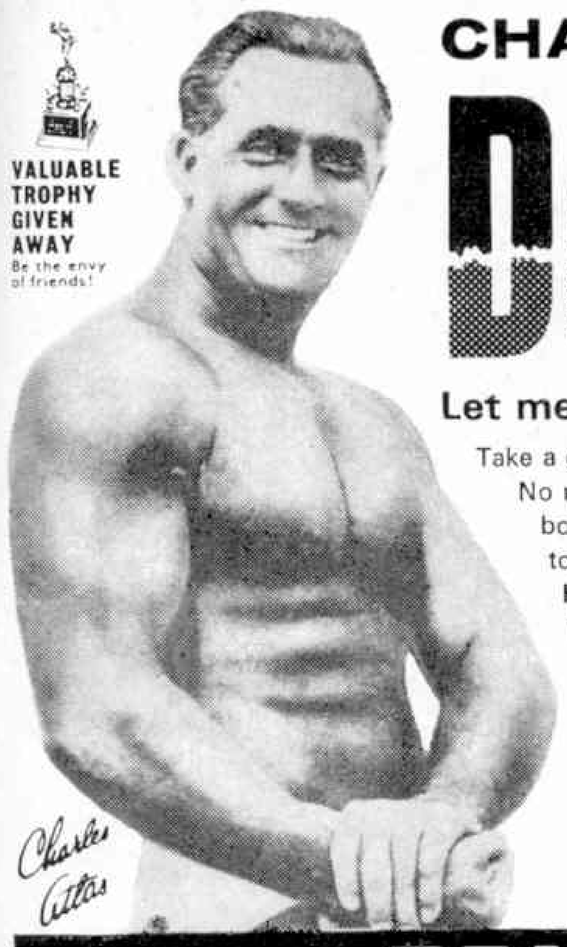

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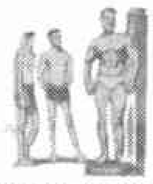

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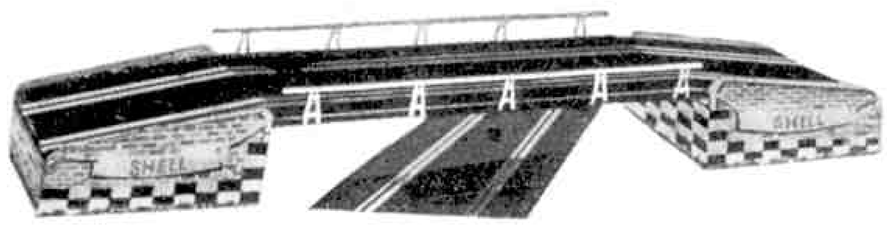

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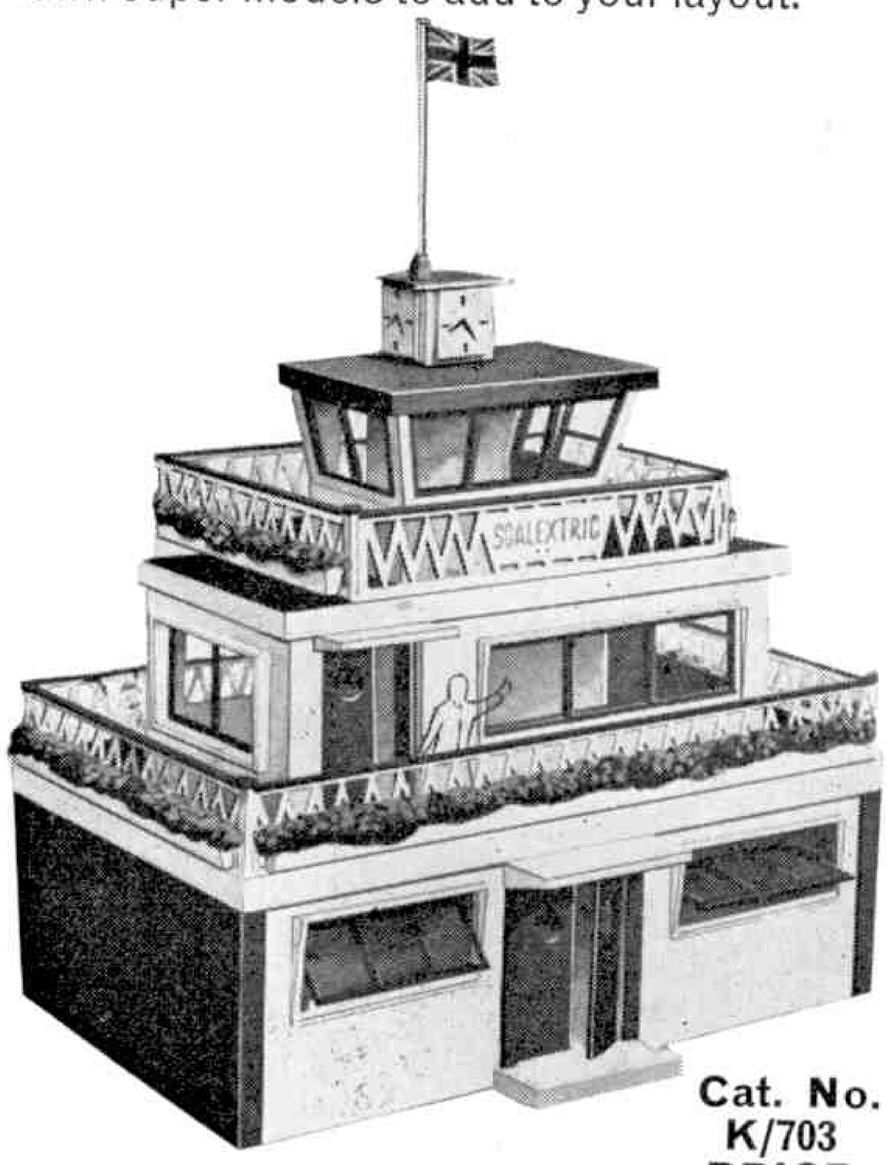

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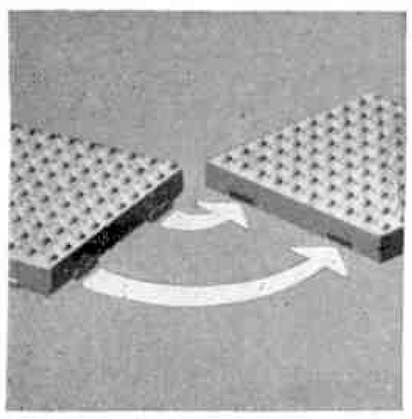
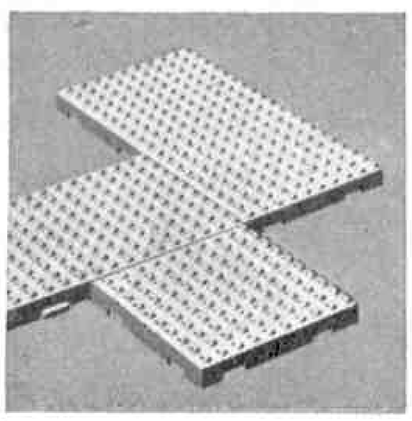
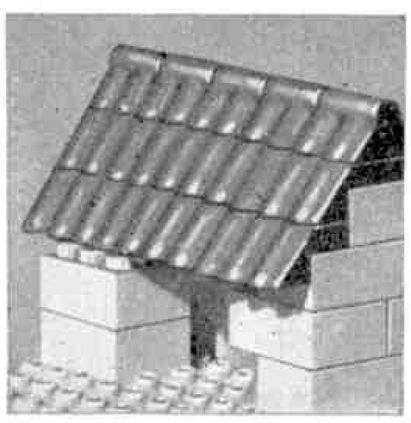


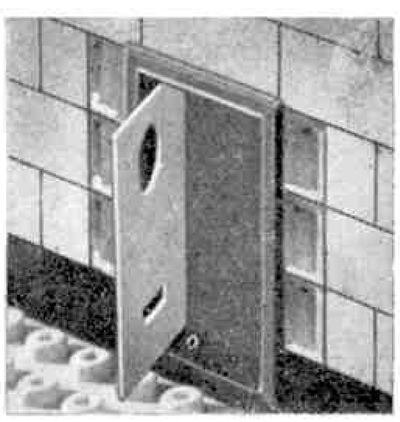
baseplates that *lock* together with special locking points — cannot fall apart





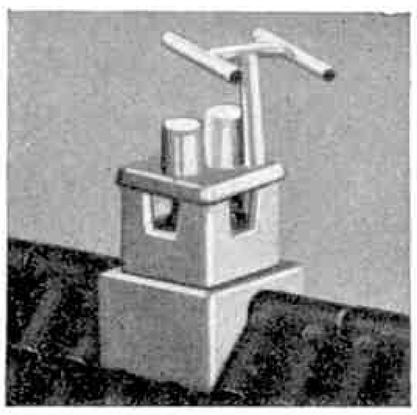
roofs that have tiles and look just like real roofs

windows that open and shut

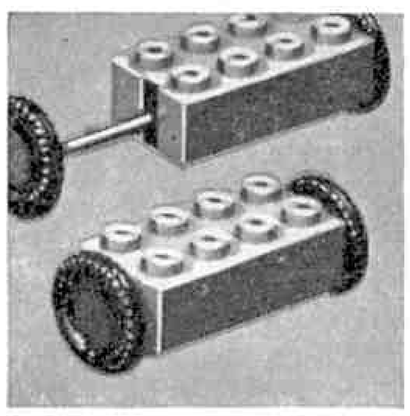


doors that are hinged to open and close

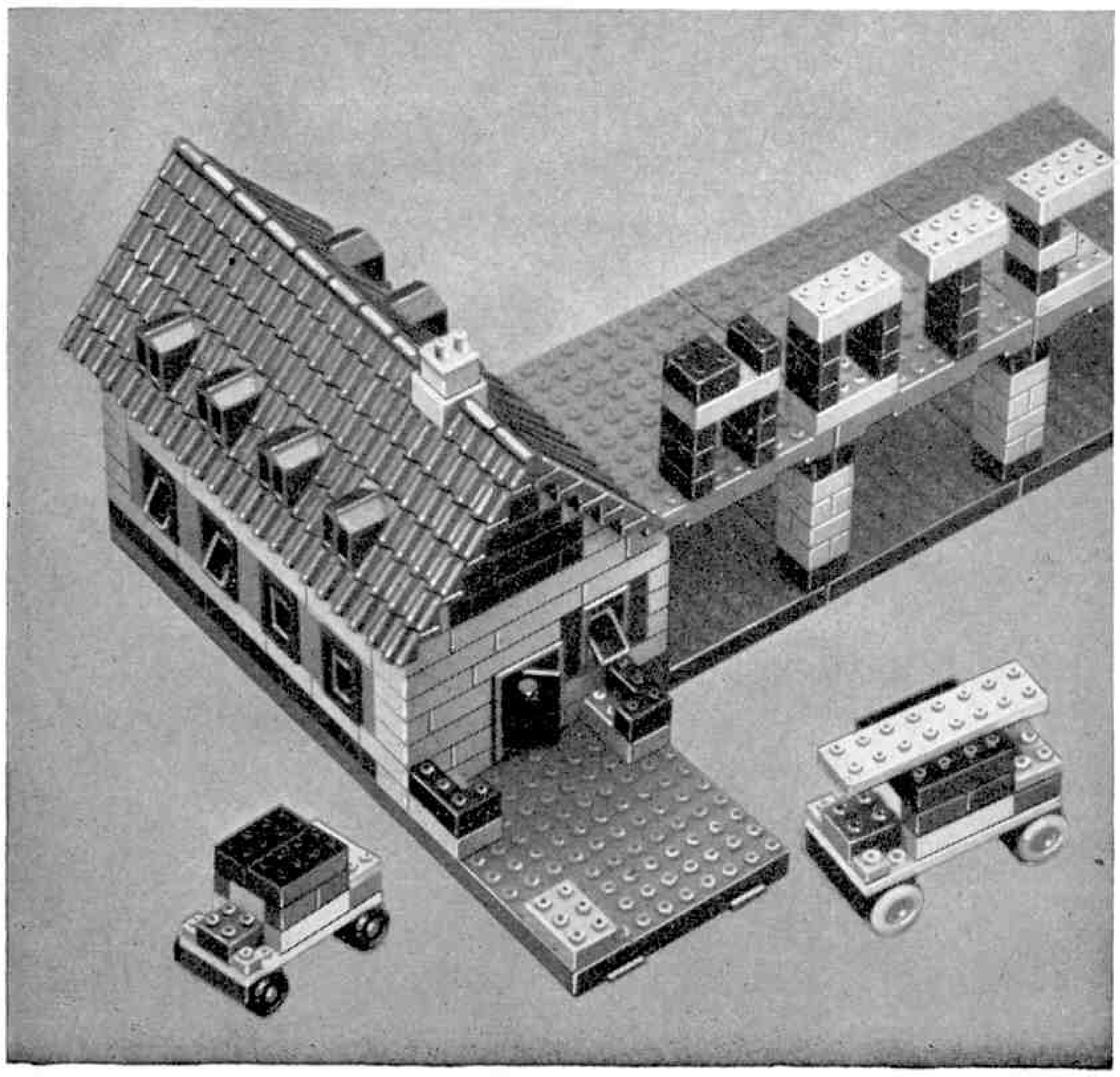
neat little bay windows with flowers in a bowl

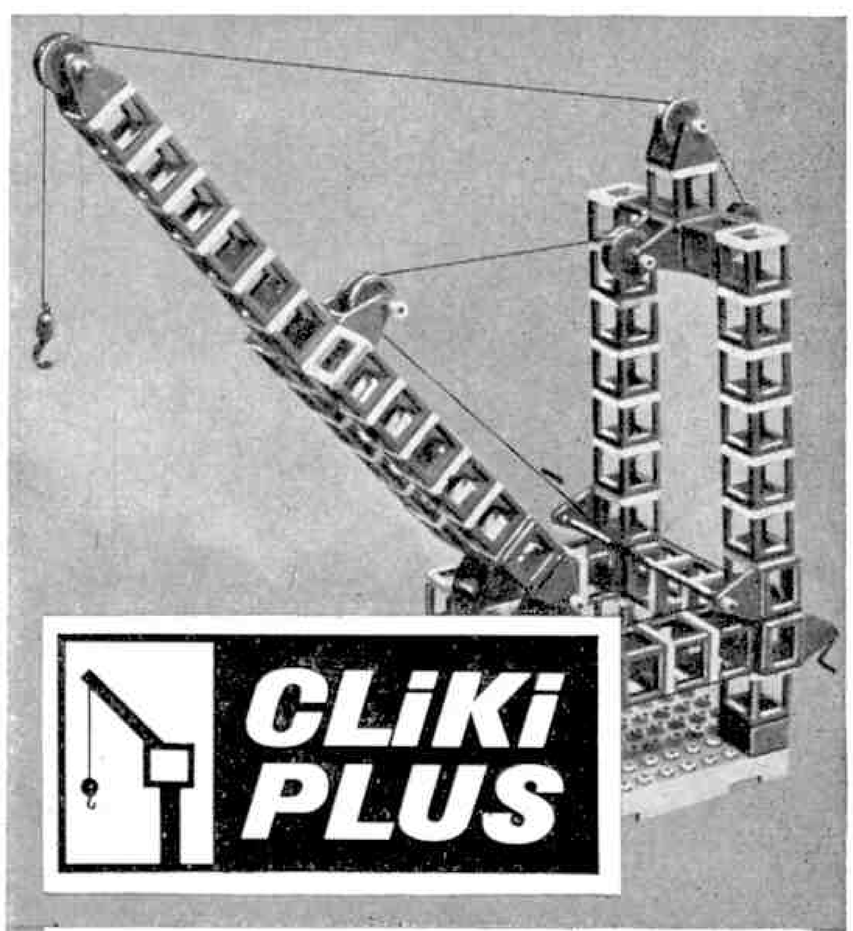


chimneys, TV aerials and many more finishing touches



with *every* set there are wheels, axles and special holed blocks for making pushalongs





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Dealers who stock MECCANO spare parts

This is the first part of a list of dealers who handle the full range of Meccano Spare Parts. It is supplementary to the page of Spare Parts Specialists appearing elsewhere in this issue. Names are arranged by Counties with entries in alphabetical order of town. This list is a fully revised and amended version of the list published in the February edition of Meccano Magazine and it will be continued next month.

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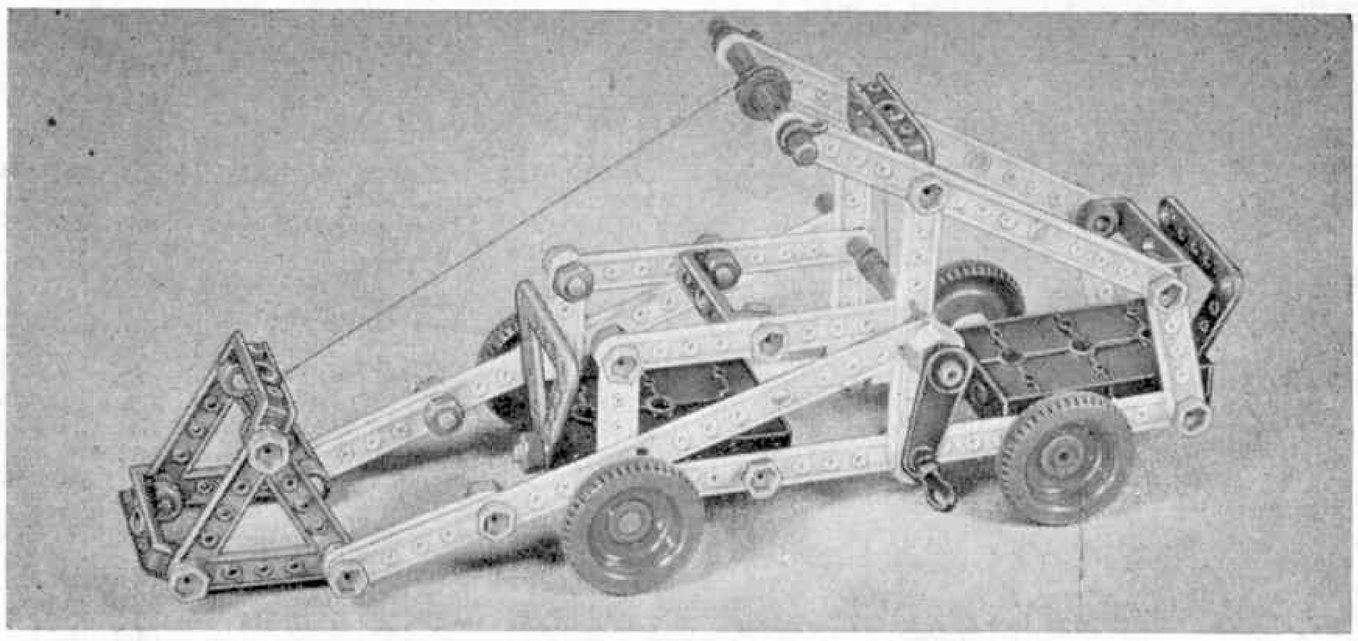

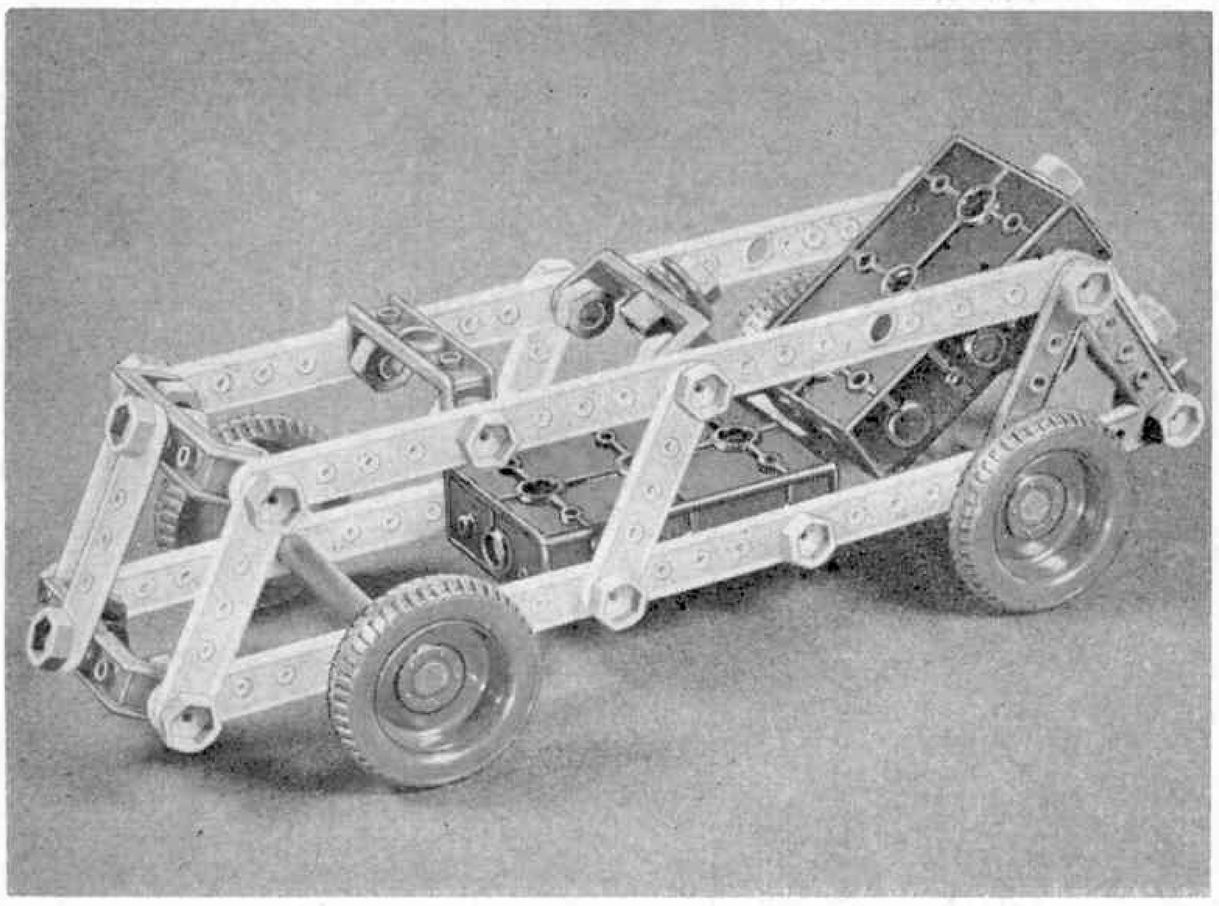

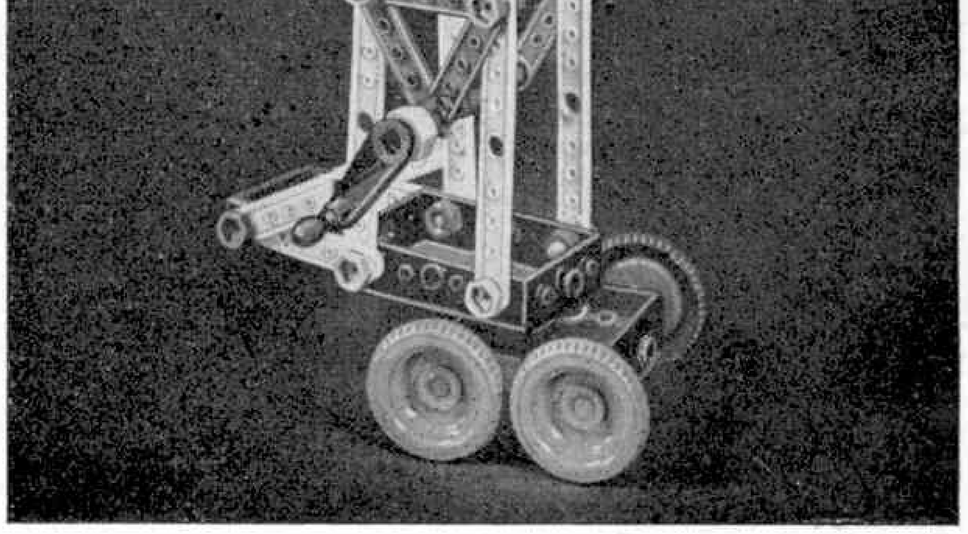

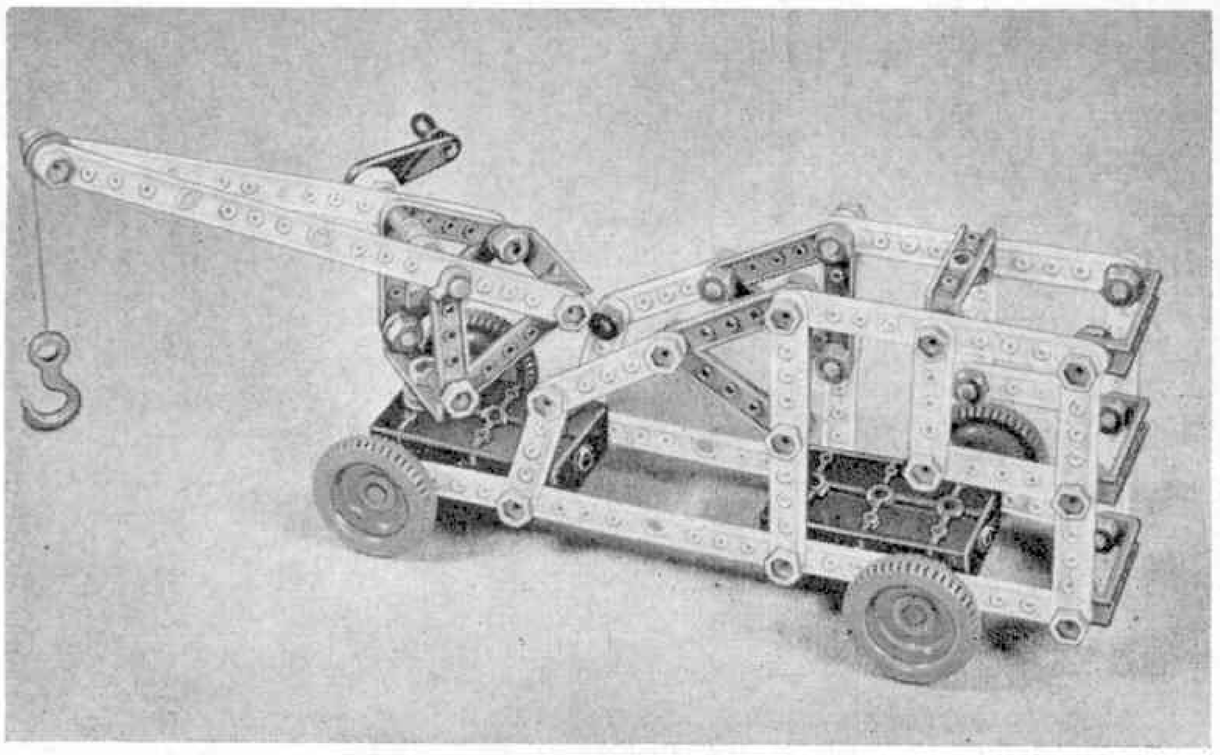

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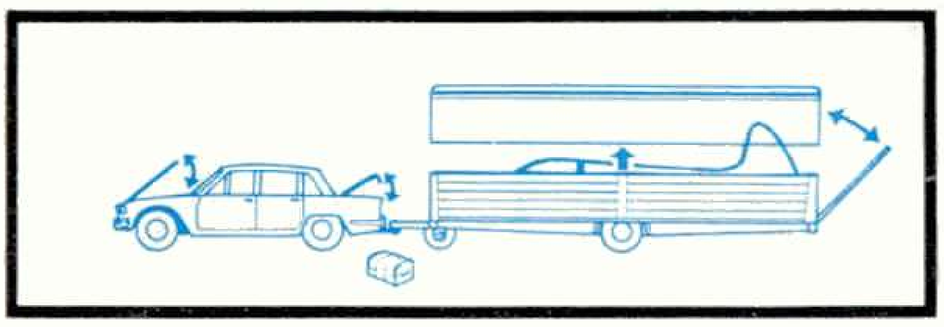

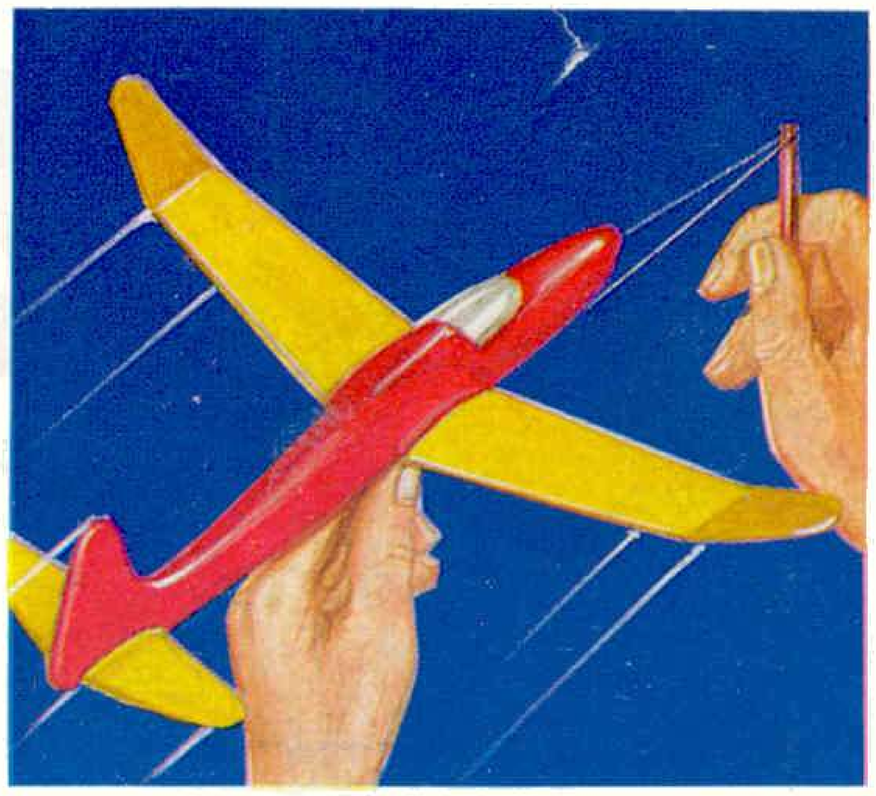

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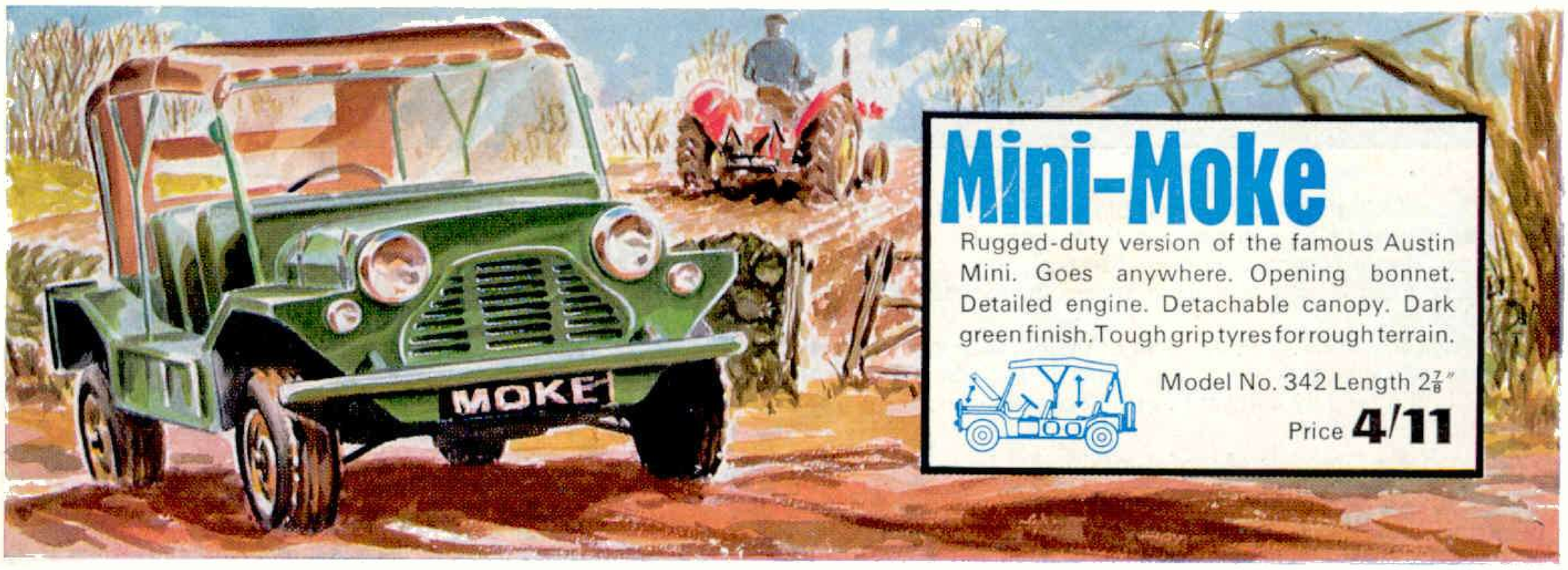

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